DRAFT FOR INITIAL REVIEW

Environmental Assessment/Regulatory Impact Review/ Initial Regulatory Flexibility Analysis for a Regulatory Amendment to Set an Initial Allocation between the Charter and Commercial IFQ Halibut Sectors and Allow for a Compensated Reallocation Program in IPHC Regulatory Areas 2C and 3A

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Abstract: The analysis contained in this document examined two potential changes to the prevailing management of the Pacific halibut charter fishing sector in Area 2C and Area 3A. Action 1 is independent of Action 2. Action 2 is dependent on the preferred alternative selected under Action 1. Whether the actions are implemented sequentially or simultaneously depend on the preferred alternatives selected by the Council.

Action 1 would set initial allocations of halibut harvests between the commercial IFQ and charter sectors in Area 2C and Area 3A. In addition to the requisite No Action Alternative, the Council considered nine options under Alternative 2 for initial sector allocations in each area. These include six fixed percentage options and three fixed poundage options; the poundage options include suboptions to step the allocations up or down depending on halibut biomass. In addition to the requisite No Action Alternative, Action 2 contains two approaches to allow compensated reallocation shifts between the halibut commercial and charter sectors to occur. Alternative 2 would allow the development of a common pool management system. Three suboptions examine potential common pool management systems: (1) Federal Common Pool; (2) State Common Pool; or (3) Regional Non-Profit Association Common Pool. Each common pool suboption would require Federal and/or State of Alaska legislation, plus a regulatory amendment to the commercial halibut individual fishing quota program. Legislative authorization places portions of the final program outside the Council process. Alternative 3 would allow the development of an individual private management system. It would require only a regulatory amendment. The analysis identified numerous overarching issues that are likely to affect the implementation of both types of systems. A supplement will be provided to highlight some of those issues.

Comments Due: Comments on this draft will be accepted by the Council up to its scheduled action on whether to release the document for public review during its October 3–9, 3007 meeting.

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ABBREVIATIONS

ADF&G	Alaska Department of Fish and Game
CEY	Constant Exploitation Yield
EO	Executive Order
GAF	Guided Angler Fish
GHL	Guideline Harvest Level
IFQ	Individual Fishing Quota
IPHC	International Pacific Halibut Commission
IRFA	Initial Regulatory Flexibility Analysis
ISER	University of Alaska, Anchorage Institute for Social and Economic Research
Mlb	Million pounds
NPFMC	North Pacific Fishery Management Council
OMB	Office of Management and Budget
QS	Quota Share
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
SBA	Small Business Administration
SWHS	Statewide Harvest Survey
TAC	Total Allowable Catch

Charter Halibut Allocation/Compensation Analysis

EXECUTIVE SUMMARY

The analysis contained in this document examined two potential changes to the prevailing management of the Pacific halibut charter fishing sector in Area 2C and Area 3A. Action 1 is independent of Action 2. Action 2 is dependent on the preferred alternative selected under Action 1. Whether the actions are implemented sequentially or simultaneously depend on the preferred alternatives selected by the Council.

Action 1 would set initial allocations of halibut harvests between the charter sector and commercial IFQ sector in Area 2C and Area 3A. In addition to the requisite No Action Alternative, the Council considered nine options under Alternative 2 for initial sector allocations in each area. These include six fixed percentage options and three fixed poundage options; the poundage options include suboptions to step the allocations up or down depending on halibut biomass.

In addition to the requisite No Action Alternative, Action 2 contains two approaches to allow compensated reallocation shifts between the halibut commercial and charter sectors to occur. Alternative 2 would allow the development of a common pool management system or an individual management system. Three suboptions examine potential common pool management systems: (1) Federal Common Pool; (2) State Common Pool; or (3) Regional Non-Profit Association Common Pool. Each common pool suboption would require Federal and/or State of Alaska legislation, plus a regulatory amendment to the commercial halibut individual fishing quota program. Legislative authorization places portions of the final program outside the Council process. The individual system would require only a regulatory amendment. The analysis identified numerous overarching issues that are likely to affect the implementation of both types of systems. A supplement will be provided to highlight some of those issues. For simplicity, the analysis uses the status quo Guideline Harvest Levels (out of nine proposed alternatives under Action 1) as the baseline for comparison of the effects of four proposed management approaches under Action 2.

In June 2007 the Council adopted staff and committee recommendations for reorganizing the suite of alternatives under Action 2 for clarity. Staff further simplified the motion in an attempt to clarify the Council's options in this analysis. The Council's motion is under Appendix I.

The Council may wish to revise the Action 1 suboptions to include final 2006 charter halibut harvests; staff recommends updating or dropping other suboptions rather than adding new suboptions. This is recommended to streamline analyses under both actions. This analysis only uses the Action 1 No Action Alternative as the basis for the analysis of the crossover effects of Action 1 with Action 2. A complete crossover analysis of nine Action 1 suboptions with four Action 2 options would result in 36 unique combinations of alternatives. Additional Action 2 suboptions for funding sources multiply the number of those unique alternatives threefold.

Environmental Assessment

The Environmental Assessment (EA) assesses the potential biological, social, and economic impacts of implementing regulations for two proposed actions. Action 1 would set an initial sector allocation between the charter and commercial halibut fisheries in International Pacific Halibut Commission (IPHC) Regulatory Areas 2C and 3A. Action 2 would allow the charter sector to compensate the commercial halibut sector for future increases in its allocation.

The problem statement that was adopted by the Council reads, ***"The absence of a hard allocation between the commercial longline and charter halibut sectors has resulted in conflicts between sectors and tensions in coastal communities that are dependent on the halibut resource. Unless a mechanism for transfer between sectors is established, the existing environment of instability and conflict will continue. The Council seeks to address this instability while balancing the needs of all who depend on the halibut resource for food, sport, or livelihood."***

The purpose of the proposed actions is to: (1) set an initial allocation (hard cap) and (2) design a program to compensate the commercial sector for any future reallocations above the level set at initial allocation. Along with restrictive control measures that were considered by the Council separate from these proposed actions because the GHL has been exceeded each year since its implementation, the proposed sector allocations are intended to stop the *de facto* reallocation from the commercial sector to the charter sector for each area. Over the past 11 years, charter halibut harvests have grown at an annualized growth rate of 6.8% in Area 2C and 4.1% in Area 3A. The number of active vessels, the total number of clients, the average number of clients per trip, and the average numbers of trips per vessel are all at their highest level in the recorded data period of 1998 through 2006. The number of clients per trip (which is one of the best measures of upward pressure on demand) has increased steadily in recent years. This increase indicates that the number of clients is rising faster than the number of trips and likely indicates healthy demand for the services provided by the charter sector.

In June 2007 the Council adopted staff and committee recommendations for reorganizing the suite of alternatives under Action 2 for clarity. Staff further simplified the motion in an attempt to clarify the Council's options in this analysis. Staff recommends that the Council consider adopting the revised structure to Action 2, Alternative 2, which was used in this analysis for clarity and additional recommendations that arose as a result of preparing the analysis, as noted below. [1]

Action 1, Alternative 1

Alternative 1 (No Action) would continue management of the charter sector under the GHL program and annual harvest control measures. It includes current Federal and State regulations that would otherwise remain unchanged. Emergency orders were issued by ADF&G in 2006 and 2007 to prohibit a sport fishing guide and sport fishing crew member on a charter vessel in Southeast Alaska from retaining fish while clients are onboard the vessel during the fishing season. As of a June 1, 2007, the status quo includes a two-fish bag limit, with one of the two fish required to be 32 inches or less [72 FR 30714]. In June 2007, the Council recommended revisions to Area 2C GHL measures, which includes a two-fish bag limit, with one of the two fish less than or equal to 32 inches; no harvest by skipper and crew when clients are on board the charter vessel; line limits of six per vessel, not to exceed the number of paying clients on board; and annual limit of four fish per angler. This preferred alternative is under Secretarial review.

Action 1, Alternative 2

Alternative 2 would set an allocation between the charter sector and the commercial IFQ sector. Nine options for initial sector allocations in each area are being considered. These include six fixed percentage options and three fixed poundage options; the poundage options include suboptions to step the allocations up or down depending on halibut biomass.

1The effect of the staff recommendations is to streamline the analysis. No effective combination of elements, options, and suboptions was dropped.

Action 2, Alternative 1

Alternative 1 would limit the charter sector to its initial allocation and annual harvest control measures to restrict charter halibut harvests below that allocation.

Action 2, Alternative 2

Alternative 2 would allow the development of a common pool management system or an individual private management system. Three suboptions examine potential common pool management systems: (1) Federal Common Pool; (2) State Common Pool; or (3) Regional Non-Profit Association Common Pool. Each common pool suboption would require Federal and/or State of Alaska legislation, plus a regulatory amendment to the commercial halibut individual fishing quota program. Legislative authorization places portions of the final program outside the Council process. The individual system would require only a regulatory amendment. The analysis identified numerous overarching issues that are likely to affect the implementation of both types of systems. A supplement will be provided that highlights some of those issues. For simplicity, the analysis uses the status quo Guideline Harvest Levels (out of nine proposed alternatives under Action 1) as the baseline for comparison of the effects of four proposed alternatives under Action 2.

List of Alternatives

Action 1. Initial Allocation

Alternative 1. No action.

Alternative 2. Establish an allocation to the halibut charter sector that includes sector accountability.

Option 1: Fixed percentage of combined charter harvest and commercial catch limit for reference period

		Area 2C	Area 3A
a.	125% of the 1995-1999 avg charter harvest (current GHL formula)	13%	14%
b.	125% of the 2000-2004 avg charter harvest (GHL formula updated thru 2004)	16%	15%
c.	125% of the 2001-2005 avg charter harvest (GHL formula updated thru 2005)	17%	15%
d.	current GHL as percent of 2004	12%	13%
e.	2004 charter harvest	14%	13%
f.	2005 charter harvest	15%	13%

Option 2: Fixed pounds

		Area 2C	Area 3A
a.	125% of the 1995-1999 avg charter harvest (current GHL)	1.4 Mlb	3.7 Mlb
b.	125% of the 2000-2004 avg charter harvest (GHL updated thru 2004)	1.7 Mlb	4.0 Mlb
c.	125% of the 2001-2005 avg charter harvest (GHL updated thru 2005)	1.9 Mlb	4.1 Mlb

Option i: Stair step down. The allocation in each area would be reduced in stepwise increments based on a decrease in the CEY. If the halibut stock were to decrease from 15% to 24% from its average CEY for the selected base period, then the allocation would be decreased by 15%. If the stock were to decrease from at least 25% to 34%, then the allocation would be decreased by an additional 10%. If the stock declined by at least 10% increments, the allocation would be decreased by an additional 10%.

Option ii: Stair step up. The allocation in each area would be increased in stepwise increments based on an increase in the CEY. If the halibut stock were to increase from 15% to 24% from its average CEY for the selected base period, then the allocation would be increased by 15%. If the stock were to increase from at least 25% to 34%, then the allocation would be increased by an additional 10%. If the stock increased by at least 10% increments, the allocation would be increased by an additional 10%.

Action 2. Compensated Reallocation between Commercial and Charter Sectors in Areas 2C and 3A

Alternative 1. No Action.

Alternative 2. Implement measures to allow compensated reallocation between the commercial sector and the charter sector. [Staff recommends replacing the italicized text of Alternative 2 with a revised Alternative, which follows]

Element 1: Holder of Quota Share, Method of Funding and Revenue Stream

Element 1.1: Federal – common pool

- *A. Method of Funding*
  - *option 1. loan*
  - *option 2. buyout program*
- *B. Revenue Stream*
  - *option 1. halibut charter stamp*
  - *option 2. moratorium permit fee*
  - *option 3. self-assessment fee*
    - *suboption 1. fee is based on number of clients*
    - *suboption 2. fee is based on number of fish*

Element 1.2: State of Alaska – common pool

- *A. Method of Funding*
  - *option 1. loan*
  - *option 2. bonding*
- *B. Revenue Stream*
  - *option 1. charter stamp*
  - *option 2. sportfishing license surcharge*
  - *option 3. business license fee/surcharge or limited entry permit holder*
    - *suboption 1. fee is based on number of clients*
    - *suboption 2. fee is based on number of fish*

Element 1.3: Regional private non-profit associations – common pool

- *A. Method of Funding*
  - *option 1. loan*
- *B. Revenue Stream*
  - *option 1. self-assessment*
    - *Suboption 1. fee is based on number of clients*
    - *Suboption 2. fee is based on number of fish*

Element 1.4: Individual - private (A moratorium permit would be required unless the moratorium is not in place, in which case a Guided Sportfish Business License would be required instead.)

- *A. Method of Funding*
  - *option 1. loan programs*
  - *option 2. private funding*

Revenue streams will be for a defined period and end after the loan or bond is paid off, i.e., continuous open-ended revenue streams are to be avoided.

Element 2: Restrictions on transferability of commercial quota share by charter sector, with grandfather clause to exempt current participants in excess of proposed limits

Element 2.1: Limits on transferability
The percentages are based on the combined commercial and charter catch limit.

A percentage of the combined commercial and charter catch limit will be available for transfer between sectors.

Option 1: 10%
Option 2: 15%
Option 3: 20%
Option 4: 25%

Element 2.2: Limits on purchase

A. entities purchasing for a common pool:
Option 1. limited annually to a percentage (30%–50%) of the average amount of QS transferred during the previous five years.
Option 2. Restrictions on vessel class sizes/blocked and unblocked/ blocks above and below sweep-up levels to leave entry size blocks available for the commercial market and to leave some larger blocks available for an individual trying to increase their poundage.

(These options are not intended to be mutually exclusive.)

B. individual: subject to the current ownership cap and block restrictions associated with commercial quota share

Element 2.3: Limits on leasing

A. Common Pool:
The common pool may only lease 0%–15% of holdings back to the commercial sector.
B. Individual charter operators:
Option 1. an individual may not hold or control more than the amount equal to the current setline ownership cap converted to the number of fish in each area (currently 1% of the setline catch limit in 2C or ½% in 3A)
Option 2. an individual may not hold or control more than 2,000, 5,000, or 10,000 fish. (Note: examine this as a percentage of the catch limit once allocations are established.)
Option 3. charter operators may lease up to 10% of their QS back to commercial sector

C. Individual commercial fishermen:
i. Commercial fishermen who do not hold a sport fishing guide business license and/or moratorium permit may lease up to 10% of their annual IFQs for use as GAF[2] on an individual basis, or to a common pool.

[2] GAF = Guided Angler Fish (This is used only as a charter unit of measurement for commercial quota share converted to charter use and is not indicative) of a particular long term solution.)

ii. Commercial fishermen who hold QS and a sport fishing guide business license and/or a halibut moratorium license may convert all or a portion of their commercial QS to Guided Angler Fish (GAF) on a yearly basis if they own and fish it themselves on their own vessel. Commercial and charter fishing may not be conducted from the same vessel during the same day.

Element 3: Implementation Issues

1. *These qualifying entities may purchase commercial QS and request NMFS to issue annual IFQs generated by these shares as Guided Angler Fish (GAF*).*

2. *Qualified entities harvesting GAF while participating in the guided sport halibut fishery are exempt from landing and use restrictions associated with commercial IFQ fishery, but subject to the landing and use provisions detailed below.*

3. *GAF would be issued in numbers of fish. The conversion between annual IFQ and GAF would be based on average weight of halibut landed in each region's charter halibut fishery (2C or 3A) during the previous year as determined by ADF&G. The long-term plan may require further conversion to some other form (e.g., angler days).*

4. *Subleasing of GAF would be prohibited.*

5. *GAF holders may request NMFS convert unused GAF into IFQ pounds for harvest in compliance with commercial fishing regulations provided the GAF holder qualifies under the commercial IFQ regulations.*

6. *Unused GAF may revert back to pounds of IFQ at the end of the year and be subject to the underage provisions applicable to their underlying commercial QS.*

7. *All compensated reallocation would be voluntary based using willing seller and willing buyer.*
Option: A pro rata reduction with compensation. A pro rata reduction would not decrease the number of QS held by an individual; rather, it would decrease the size of the total commercial pool from which IFQs are annually calculated. The effect would be similar to how a decrease in abundance affects annual calculation of IFQs, except that quota share holders would be compensated for the resultant poundage reduction of their IFQs.
Option: Exempt category D QS from voluntary and involuntary pro rata reduction with compensation

8. *Guided angler fish derived from commercial QS may not be sold into commerce, i.e., all sport regulations remain in effect.*

9. *Guided angler fish derived from commercial QS may not be used to harvest fish in excess of the non-guided sport bag limit on any given day.*

10. *There needs to be a link between the charter business operators and the cost of increasing the charter pool. If the charter business operators do not experience the cost of increasing the charter pool, there will not be a feedback loop to balance the market system.*

** indicates changes made by the AP to the Halibut Stakeholder recommendations

Staff recommendation[3] for Revised Alternative 2. Common Pool Management for Compensated Reallocation

Element 1: Holder of Quota Share, Method of Funding and Revenue Stream

Element 1.1: Method of Funding

A. Federal Common Pool
   - option 1. loan
   - option 2. buyout program

B. State of Alaska Common Pool
   - option 1. loan
   - option 2. bonding

C. Regional Non-Profit Association Common Pool
   - option 1. loan

Element 1.2: Revenue Stream

A. Federal Common Pool
   - option 1. halibut charter stamp
   - option 2. moratorium permit fee
   - option 3. self-assessment fee
     - suboption 1. fee is based on number of clients
     - suboption 2. fee is based on number of fish

B. State of Alaska Common Pool
   - option 1. charter stamp
   - option 2. sportfishing license surcharge
   - option 3. business license fee/surcharge or limited entry permit holder
     - suboption 1. fee is based on number of clients
     - suboption 2. fee is based on number of fish

C. Regional Non-Profit Association Common Pool
   - option 1. self-assessment
     - Suboption 1. fee is based on number of clients
     - Suboption 2. fee is based on number of fish

Revenue streams will be for a defined period and end after the loan or bond is paid off, i.e., continuous open-ended revenue streams are to be avoided.

Element 2: Restrictions on transferability of commercial quota share by charter sector, with grandfather clause to exempt current participants in excess of proposed limits

Element 2.1: Limits on transferability

The percentages are based on the combined commercial and charter catch limit. A percentage of the combined commercial and charter catch limit will be available for transfer between sectors.

- Option 1: 10%
- Option 2: 15%
- Option 3: 20%
- Option 4: 25%

[3] Staff recommends that the Council consider further streamlining by moving some options that it does not consider viable into a rejected alternative section.

Element 2.2: Limits on purchase

Entities purchasing for a common pool:

Option 1. limited annually to a percentage (30%–50%) of the average amount of QS transferred during the previous five years**.**

Option 2. Restrictions on vessel class sizes/blocked and unblocked/ blocks above and below sweep-up levels to leave entry size blocks available for the commercial market and to leave some larger blocks available for an individual trying to increase their poundage.

(These options are not intended to be mutually exclusive.)

Element 2.3***:*** Limits on leasing - the common pool may only lease 0%–15% of holdings back to the commercial sector.

Staff Recommendation for Revised Alternative 3. Individual Management for Compensated Reallocation

Element 1: Holder of Quota Share, Method of Funding and Revenue Stream

Element 1.1: Method of Funding

option 1. loan programs
option 2. private funding

Element 1.2: Revenue Streams will come from private sources.

Element 2: Restrictions on transferability of commercial quota share by charter sector, with grandfather clause to exempt current participants in excess of proposed limits

Element 2.1: Limits on transferability
The percentages are based on the combined commercial and charter catch limit. A percentage of the combined commercial and charter catch limit will be available for transfer between sectors.

Option 1: 10%
Option 2: 15%
Option 3: 20%
Option 4: 25%

Element 2.2: Limits on purchase - Individuals are subject to the current ownership cap and block restrictions associated with commercial quota share

Element 2.3***:*** Limits on leasing

A. Individual charter operators:

Option 1. an individual may not hold or control more than the amount equal to the current setline ownership cap converted to the number of fish in each area (currently 1% of the setline catch limit in 2C or ½% in 3A)

Option 2. an individual may not hold or control more than 2,000, 5,000, or 10,000 fish. (Note: examine this as a percentage of the catch limit once allocations are established.)

Option 3. charter operators may lease up to 10% of their QS back to commercial sector

B. Individual commercial fishermen:

i. Commercial fishermen who do not hold a sport fishing guide business license and/or moratorium permit may lease up to 10% of their annual IFQs for use as GAF[4] on an individual basis, or to a common pool.

ii. Commercial fishermen who hold QS and a sport fishing guide business license and/or a halibut moratorium license may convert all or a portion of their commercial QS to GAF on a yearly basis if they own and fish it themselves on their own vessel. Commercial and charter fishing may not be conducted from the same vessel during the same day.

Alternative 2 Implementation Issues

1. These qualifying entities may purchase commercial QS and request NMFS to issue annual IFQs generated by these shares as Guided Angler Fish (GAF*). ***Affects the Private Pool Only.***

2. Qualified entities harvesting GAF while participating in the guided sport halibut fishery are exempt from landing and use restrictions associated with commercial IFQ fishery, but subject to the landing and use provisions detailed below. ***Affects both the Private Pool and Common Pool.***

3. GAF would be issued in numbers of fish. The conversion between annual IFQ and GAF would be based on average weight of halibut landed in each region's charter halibut fishery (2C or 3A) during the previous year as determined by ADF&G. The long-term plan may require further conversion to some other form (e.g., angler days). ***Affects both the Private Pool and Common Pool.***

4. Subleasing of GAF would be prohibited. ***Affects the Private Pool Only.***

5. GAF holders may request NMFS convert unused GAF into IFQ pounds for harvest in compliance with commercial fishing regulations provided the GAF holder qualifies under the commercial IFQ regulations. ***Affects the Private Pool Only.***

6. Unused GAF may revert back to pounds of IFQ at the end of the year and be subject to the underage provisions applicable to their underlying commercial QS. ***Affects both the Private Pool and Common Pool.***

7. All compensated reallocation would be voluntary based using willing seller and willing buyer.

Option: A pro rata reduction with compensation. A pro rata reduction would not decrease the number of QS held by an individual; rather, it would decrease the size of the total commercial pool from which IFQs are annually calculated. The effect would be similar to how a decrease in abundance affects annual calculation of IFQs, except that quota share holders would be compensated for the resultant poundage reduction of their IFQs.

Option: Exempt category D QS from voluntary and involuntary pro rata reduction with compensation

Affects both the Private Pool and Common Pool.

8. Guided angler fish derived from commercial QS may not be sold into commerce, i.e., all sport regulations remain in effect. ***Affects both the Private Pool and Common Pool.***

[4] *GAF = Guided Angler Fish (This is used only as a charter unit of measurement for commercial quota share converted to charter use and is not indicative) of a particular long term solution.)

** indicates changes made by the AP to the Halibut Stakeholder recommendations

9. Guided angler fish derived from commercial QS may not be used to harvest fish in excess of the non-guided sport bag limit on any given day. ***Affects both the Private Pool and Common Pool.***

10. There needs to be a link between the charter business operators and the cost of increasing the charter pool. If the charter business operators do not experience the cost of increasing the charter pool, there will not be a feedback loop to balance the market system. ***Affects both Common Pool Only.***

Staff Recommendations for Alternative 2 Implementation Issues

Staff recommends that the proposed Implementation Issues (except #7) be moved out of the alternatives and into the respective analytical sections of the analyses. As originally recommended by the Charter Halibut Stakeholder Committee, commercial halibut QS and/or IFQs transferred for use in the charter sector would be in the form (ONLY) of guided angler fish (or GAF). This presupposes that the Council will not pursue a future action for a share-based program using charter IFQs (instead of GAFs. If the Council has not identified GAFs as its only mechanism to administer the use of commercial QS/IFQs in the charter sector, then it should be moved into a new Element under both alternatives

Staff recommends that Issue 7 be identified as a "new" element to all Alternative 2 options and requests that the Council clarify whether the element addresses both QS and IFQ. This point is not explicitly stated in the language of the options, but it is implied in the language of the some of the implementation issues.

New Element 1.3. Source of commercial QS/IFQs* for compensation

Option 1. All compensated reallocation would be voluntary based on willing sellers and willing buyers.
Suboption: Exempt category D QS from the compensation program

Option 2. A pro rata reduction with compensation. A pro rata reduction would not decrease the number of QS held by an individual; rather, it would decrease the size of the total commercial pool from which IFQs are annually calculated. The effect would be similar to how a decrease in abundance affects annual calculation of IFQs, except that quota share holders would be compensated for the resultant poundage reduction of their IFQs.
Suboption: Exempt category D QS pro rata reduction with compensation

*the Council should clarify whether QS (permanent) and IFQs (annual) transfers are included in the compensation program

Regulatory Impact Review

The Council has been working to resolve conflicts between various groups that harvest halibut from Areas 2C and 3A since the early 1990s. While the Council has made progress in setting the groundwork to resolve these conflicts, some major obstacles remain. One primary obstacle that exists is the allocation of halibut between the commercial IFQ sector and the charter sector. The GHL sets a target amount of halibut for the charter sector. However, the GHL has no inherent regulatory mechanism to halt charter harvests when its target is reached. The proposed allocation to the two sectors is intended to set a harvest limit that will result in the charter sector being required to stop fishing when it harvests its allocation.

Two general methods are being considered by the Council to allocate the available halibut between the sectors. Alternative 2 Option 1 calculated the charter allocation as a percentage of its historic harvest relative to the combined commercial and charter harvest. Six different combinations of years were used to calculate the percentages of the Fishery CEY that the charter sector would be allocated. Because the allocations are based on a percentage of the halibut available to the two sectors, fluctuations in biomass or

changes to the Fishery CEY will change the amount of halibut the two sectors may harvest. If the Fishery CEY increases (decreases), both sectors will be allowed to harvest more (less) halibut.

Alternative 2 Option 2 used three combinations of years to calculate the number of pounds the charter sector would be allocated. Because its allocation would be fixed, changes in the Fishery CEY would not change the allocation. Instead, the commercial sector would absorb any increase (decrease) in the halibut available to the two sectors combined. The stair-step up and down suboptions define the points at which CEY changes trigger a specific change in the charter allocation. The effect of the step suboptions is to float the allocation with changes in the Total CEY. So, the suboptions cause the fixed allocations to more closely behave like the percentage based allocations.

For any of the options being considered to be effective, the management agency with in-season management authority over the charter sector must have adequate in-season harvest data to restrict charter harvest when the allocation is taken (as occurs in the commercial IFQ fishery). If the charter sector is allowed to continue harvesting halibut after its allocation is taken, the result of this amendment would be similar to the GHL that is currently in place. The allocation would be a target amount, but by itself has no impact on the amount of halibut the charter sector could harvest.

The ADF&G Sport Fish Division modified its logbook requirements in 2006. Those changes require weekly reporting of all halibut harvested by each charter client. Weekly reporting of harvest by charter client is expected to increase the timeliness, accuracy, and precision of the halibut data. Because of the changes to the logbook reporting requirements, the analysis assumed that the management agencies will have sufficient information to project when the charter sector's allocation will be reached and limit the retention of halibut at that time. If the logbooks prove to be inadequate, additional reporting requirements would need to be implemented to enforce the intent of this action.

Expected Effect of Alternative 1

An important component of the Status Quo analysis is the projection of future charter harvests. The authors provided estimates of the annual charter harvest for the years 2006-2015, using the status quo management measures that are currently in place or have been approved by the Council but not yet implemented, for both Area 2C and Area 3A. To generate these estimates several assumptions needed to be made.

The projections use both a long-term (i.e., 1995-2006) industry growth rates to create a lower expectation of future harvests and a five-year (i.e., 2001-2006) average growth rates to create a higher projection of future harvests.

Charter growth is not linear and the industry has experienced years where total harvest declines from previous years. Thus, these projections represent projections of trends based on averages.

Estimates of future Area 2C and Area 3A charter harvests are show in Table 1. In Area 2C the projected harvest decreases each year from 2006 to 2008. The decrease is a result of the new harvest restriction imposed by NMFS and the Council on charter harvests during 2007. From 2008 through 2015 the projected charter harvest increases by about 6.8% per year under the low growth rate and 11.7% per year under the high growth rate. In Area 3A, the charter harvest is projected to only decrease from 2006 to 2007. This projection could change if the Council moves forward with the Area 3A measures to limit charter growth that are currently under consideration. The projected growth rate for Area 3A is about 3.0% per year from 2007 through 2015 under the low growth rate. The higher projected growth rate increases the annual estimates by about 4.7% per year.

Table 1 Projected Charter Harvest, 2006-2015 (Mlb)

	Area 2C				Area 3A			
	Projected Charter Harvest Mlb)		Pounds Needed Above GHL (Mlb)		Projected Charter Harvest Mlb)		Pounds Needed Above GHL (Mlb)	
Year	Low Average	High Average	Low Average	High Average	Low Average	High Average	Low Average	High Average
2006	2.035	2.035	0.603	0.603	3.947	3.947	0.297	0.297
2007	1.622	1.846	0.190	0.414	3.635	3.696	-0.015	0.046
2008	1.457	1.698	0.025	0.266	3.745	3.871	0.095	0.221
2009	1.556	1.896	0.124	0.464	3.858	4.054	0.208	0.404
2010	1.662	2.118	0.230	0.686	3.975	4.246	0.325	0.596
2011	1.776	2.365	0.344	0.933	4.095	4.447	0.445	0.797
2012	1.896	2.641	0.464	1.209	4.219	4.657	0.569	1.007
2013	2.026	2.950	0.594	1.518	4.346	4.878	0.696	1.228
2014	2.164	3.294	0.732	1.862	4.477	5.109	0.827	1.459
2015	2.311	3.679	0.879	2.247	4.613	5.351	0.963	1.701

Source: NEI Estimates, 2007

Based on the 2006 GHL, the Area 2C charter sector is projected to exceed the GHL every year. By 2015, they are projected to be over the GHL by 0.88 Mlb to 2.25 Mlb, depending on their harvest rate growth. In Area 3A, under the slower growth they are projected to exceed their allocation every year starting in 2008. By 2015, the charter sector is projected to be from 0.96 Mlb to 1.70 Mlb over their GHL. Because of the way the commercial catch limit is set the increases in the charter harvest will reduce the commercial allocation by an equal amount, all else being equal.

Expected Effect of Alternative 2

Option 1: Option 1 would set the charter allocation as a percentage of the halibut available to the commercial and charter sectors. Because the charter allocation is set as a percentage of the Fishery CEY, any changes in the Fishery CEY will change the pounds of halibut available to the charter sector. If the Fishery CEY increases the charter sector will share the increase with the commercial sector at the same percentage as their allocation. For example, of the fishery CEY increases by 1 Mlb and the charter sector is allocated 15%, the increase would result in the charter sector being allowed to harvest an additional 150,000 pounds of halibut. Conversely, a decrease of 1Mlb would decrease the charter allocation by 150,000 pounds. Fishery CEY fluctuations have always concerned both the commercial and the charter sectors, but the charter sector has argued that they book clients a year in advance and cannot always predict the CEY changes. If the Fishery CEY dropped dramatically, the may have a client that would not be allowed to retain halibut. That would hurt the businesses reputation and because word of mouth advertising is important, would reduce future demand for their service.

Six different percentage options are being considered. The only option that generates a smaller allocation for the charter sector for Area 2C than the 13.1% under the Status Quo (Option 1(a)), is Option 1(d) using the GHL allocation formula as a percentage of 2004. It yields an allocation of 11.7%. All of the other options generate an allocation to the charter sector that is larger than the current GHL. The largest charter allocation is calculated using Option 1(c) (17.3%).

In Area 3A, the Status Quo (Option 1(a)) results in the charter sector being allocated 14.0% of the combined commercial and charter halibut. Only the alternatives based on 125% of the average charter harvest using the GHL formula from 2000-2004 (Option 1(d) and 125% of average charter harvest using

the GHL formula from 2001-2005 generate a larger charter sector allocation. The other three alternatives all yield a charter sector allocation of 12.7% to 12.8% for the combined charter and commercial halibut.

When the various charter allocations are compared to the projected future charter harvest under the Status Quo, it provides an estimate of when the charter sector would exceed their allocation. To generate those estimates the future charter harvests provided by NEI were compared with the projected charter allocation[5]. Those estimates show the year the charter sector is expected to exceed their allocation and the amount they are over or under. The assumptions build into the estimates include:

- The growth in charter harvests in 2007-2015 will follow the projections made by Northern Economics, Inc. If they over estimate the charter sector harvests, the charter sector could stay under their allocation longer than reported in Option 1 tables (Table 2 and Table 3). If the estimates are too small, the charter sector could exceed their allocation sooner than reported.
- The total amount of halibut available to the charter and commercial IFQ sectors in IPHC areas 2C and 3A were assumed to be 9.942 Mlb in 2C and 29.85 Mlb in area 3A. Because the 2007 CEY is smaller than the 2006 CEY in area 2C, it is anticipated that the estimates for Option 1 would under estimate the years the charter sector remains under their harvest limit. Because the2007 CEY was larger than 2006, the area 3A, it may take longer for the charter sector to exceed their allocation than shown in the Option 1 tables. Option 2 is not be affected by the CEY change unless the suboptions are also included.

Table 2 shows projections of the percentage of the combined charter and commercial allocation the charter sector will be over (under) their allocation by year. The shaded cells show the years the charter sector is projected to remain within their allocation and the cells that are not shaded indicate the charter sector exceeded their allocation. Percentages shown in the table can be added to the initial allocation percentage to show what the initial allocation would need to be for the charter sector to stay within their allocation. For example, in Area 2C the cell under low charter growth for Option 2(a) during 2015 is 10.2%. That percentage indicates the charter allocation would need to be increased from 13.1% to 23.3% for the charter sector to stay within their cap. The shaded cells show the percentage of the halibut available the charter sector would not use at the end of the year.

The information in the table shows that the charter sector is projected to exceed their 2C allocation under a high growth rate by 2008 in every alternative. Under the low growth rate, Option 1(c) is projected to allow the charter sector to stay under their allocation until 2011.

In Area 3A, Options 1(a) through Option 1(c) are much less of a constraint than the other alternatives. Under Options 1(a) through Option 1(c) using the low growth rate, the charter sector is either not constrained by their allocation or the do not reach their proposed harvest limit until 2012. The higher growth rate causes the charter sector to exceed their allocation sooner. But, the charter sector is still within their cap until 2010 to 2013, depending on the alternative selected.

[5] Note that ADF&G Sport Fish Division has recently revised the 2006 charter harvest estimates. The revised estimates have not been included in these calculations, due to time constraints. They are anticipated to be used to revise the estimates in future drafts of this analysis.

Table 2 Projections of when and by how much (in percentages) the Option 1 allocations will be exceeded

	% Over Alt. "a"		% Over Alt. "b"		% Over Alt. "c"		% Over Alt. "d"		% Over Alt. "e"		% Over Alt. "f"	
Year	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
IPHC AREA 2C												
Initial Allocation	13.10%		16.40%		17.30%		11.70%		14.30%		15.10%	
2006	7.4%	7.4%	4.0%	4.0%	3.2%	3.2%	8.8%	8.8%	6.2%	6.2%	5.3%	5.3%
2007	3.2%	5.5%	-0.1%	2.1%	-1.0%	1.3%	4.6%	6.9%	2.0%	4.3%	1.2%	3.4%
2008	1.6%	4.0%	-1.8%	0.6%	-2.7%	-0.2%	3.0%	5.4%	0.4%	2.8%	-0.5%	1.9%
2009	2.6%	6.0%	-0.8%	2.6%	-1.7%	1.8%	4.0%	7.4%	1.4%	4.8%	0.5%	3.9%
2010	3.6%	8.2%	0.3%	4.9%	-0.6%	4.0%	5.0%	9.6%	2.4%	7.0%	1.6%	6.2%
2011	4.8%	10.7%	1.4%	7.3%	0.6%	6.5%	6.2%	12.1%	3.6%	9.5%	2.7%	8.6%
2012	6.0%	13.5%	2.6%	10.1%	1.8%	9.3%	7.4%	14.9%	4.8%	12.3%	3.9%	11.4%
2013	7.3%	16.6%	3.9%	13.2%	3.1%	12.4%	8.7%	18.0%	6.1%	15.4%	5.2%	14.5%
2014	8.7%	20.0%	5.3%	16.7%	4.5%	15.8%	10.1%	21.4%	7.5%	18.8%	6.6%	18.0%
2015	10.2%	23.9%	6.8%	20.6%	5.9%	19.7%	11.6%	25.3%	9.0%	22.7%	8.1%	21.9%
IPHC AREA 3A												
Initial Allocation	14.00%		15.80%		15.40%		12.70%		12.80%		12.70%	
2006	-0.8%	-0.8%	-2.6%	-2.6%	-2.2%	-2.2%	0.5%	0.5%	0.4%	0.4%	0.6%	0.6%
2007	-1.8%	-1.6%	-3.7%	-3.5%	-3.3%	-3.1%	-0.5%	-0.3%	-0.6%	-0.4%	-0.5%	-0.3%
2008	-1.5%	-1.0%	-3.3%	-2.9%	-2.9%	-2.5%	-0.2%	0.3%	-0.2%	0.2%	-0.1%	0.3%
2009	-1.1%	-0.4%	-2.9%	-2.3%	-2.5%	-1.9%	0.2%	0.9%	0.2%	0.8%	0.3%	0.9%
2010	-0.7%	0.2%	-2.5%	-1.6%	-2.1%	-1.2%	0.6%	1.5%	0.5%	1.5%	0.7%	1.6%
2011	-0.3%	0.9%	-2.1%	-0.9%	-1.7%	-0.5%	1.0%	2.2%	0.9%	2.1%	1.1%	2.2%
2012	0.1%	1.6%	-1.7%	-0.2%	-1.3%	0.2%	1.4%	2.9%	1.4%	2.8%	1.5%	2.9%
2013	0.6%	2.3%	-1.3%	0.5%	-0.9%	0.9%	1.9%	3.6%	1.8%	3.6%	1.9%	3.7%
2014	1.0%	3.1%	-0.8%	1.3%	-0.4%	1.7%	2.3%	4.4%	2.2%	4.3%	2.3%	4.5%
2015	1.5%	3.9%	-0.4%	2.1%	0.0%	2.5%	2.7%	5.2%	2.7%	5.2%	2.8%	5.3%

Source: NEI charter harvest projections. Projections of charter allocations.

Based on the information reported in Table 2 the charter sector will be constrained by any of the allocation at the time they are implemented or within the next three years. In Area 3A the allocations could be binding as soon as 2008, or they may not constrain the charter sector through 2015. If additional 3A management measures are imposed on charter sector in 3A, the length of time for the sector to reach the allocation limit could be increased. Conversely, if the 2C CEY declines in future years relative to 2006, the charter sector will be constrained by the allocation limit even sooner than projected in the table.

Table 3 shows information similar to that provided in Table 2 except the amounts are shown in millions of pounds. By converting the results to millions of pounds, it is relatively straight forward to show the number of pounds the commercial sector would forgo by continuing the status quo versus implementing one of the Option 1 alternative. Assuming that for every pound the charter sector exceeds their allocation the commercial sector loses a pound of IFQ, we can show the reduction in commercial IFQ by year through 2015. For example, if the Council selected Option 1(b) for Area 2C, the commercial sector would not benefit from implementing the charter allocation until 2010. That year the charter allocation would prevent 30,000 pounds of IFQ from being reallocated to the charter sector. By 2015, the commercial sector would retain an additional 680,000 pounds of IFQ as a result of the charter harvest limit.

Table 3 Projections of when and by how much (in pounds) the Option 1 allocations will be exceeded

	Mlb Over Alt. "a"		Mlb Over Alt. "b"		Mlb Over Alt. "c"		Mlb Over Alt. "d"		Mlb Over Alt. "e"		Mlb Over Alt. "f"	
Year	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
IPHC AREA 2C												
Initial Allocation	13.10%		16.40%		17.30%		11.70%		14.30%		15.10%	
2006	0.73	0.73	0.40	0.40	0.31	0.31	0.87	0.87	0.61	0.61	0.53	0.53
2007	0.32	0.54	(0.01)	0.21	(0.10)	0.12	0.46	0.68	0.20	0.43	0.12	0.34
2008	0.16	0.40	(0.18)	0.06	(0.26)	(0.02)	0.29	0.54	0.04	0.28	(0.05)	0.19
2009	0.25	0.59	(0.08)	0.26	(0.17)	0.17	0.39	0.73	0.14	0.48	0.05	0.39
2010	0.36	0.82	0.03	0.48	(0.06)	0.40	0.50	0.96	0.24	0.70	0.16	0.61
2011	0.47	1.06	0.14	0.73	0.05	0.64	0.61	1.20	0.36	0.94	0.27	0.86
2012	0.59	1.34	0.26	1.01	0.17	0.92	0.73	1.48	0.48	1.22	0.39	1.14
2013	0.72	1.65	0.39	1.31	0.30	1.23	0.86	1.79	0.61	1.53	0.52	1.44
2014	0.86	1.99	0.53	1.66	0.44	1.57	1.00	2.13	0.74	1.87	0.66	1.79
2015	1.01	2.38	0.68	2.04	0.59	1.96	1.15	2.52	0.89	2.26	0.81	2.17
IPHC AREA 3A												
Initial Allocation	14.00%		15.80%		15.40%		12.70%		12.80%		12.70%	
2006	(0.23)	(0.23)	(0.78)	(0.78)	(0.66)	(0.66)	0.15	0.15	0.13	0.13	0.17	0.17
2007	(0.54)	(0.48)	(1.09)	(1.03)	(0.98)	(0.91)	(0.16)	(0.10)	(0.18)	(0.12)	(0.14)	(0.08)
2008	(0.43)	(0.31)	(0.98)	(0.86)	(0.87)	(0.74)	(0.05)	0.08	(0.07)	0.06	(0.03)	0.09
2009	(0.32)	(0.13)	(0.87)	(0.67)	(0.75)	(0.56)	0.07	0.26	0.04	0.24	0.08	0.28
2010	(0.20)	0.07	(0.75)	(0.48)	(0.64)	(0.36)	0.18	0.45	0.16	0.43	0.20	0.47
2011	(0.08)	0.27	(0.63)	(0.28)	(0.52)	(0.16)	0.30	0.65	0.28	0.63	0.32	0.67
2012	0.04	0.48	(0.51)	(0.07)	(0.39)	0.05	0.43	0.86	0.41	0.84	0.44	0.88
2013	0.17	0.70	(0.38)	0.15	(0.26)	0.27	0.55	1.09	0.53	1.06	0.57	1.10
2014	0.30	0.93	(0.25)	0.38	(0.13)	0.50	0.68	1.32	0.66	1.30	0.70	1.33
2015	0.43	1.17	(0.12)	0.62	0.00	0.74	0.82	1.56	0.80	1.54	0.84	1.57

Source: NEI charter harvest projections. Projections of charter allocations.

Option 2: The Council is considering three alternatives under Option 2. All of the alternatives would allocate the charter sector a fixed number of pounds of halibut. Because the allocation is fixed, changes in the Fishery CEY do not impact the charter sector. All of the increase or decrease in the Fishery CEY is reflected in the commercial allocation. Because we have assumed that the Fishery CEY is 9.94 Mlb in Area 2C and 29.85 Mlb in Area 3A, any increase (decrease) from that amount would flow to (from) the commercial sector. The fixed allocation to the charter provides more certainty regarding how long their fishery will last before they reach the cap. That allows them to market their trips for the following year with better information to provide potential clients on when they should take a trip to be certain they will be able to retain halibut.

Option 2(a) through Option 2(c) allocate 1.43 Mlb, 1.69 Mlb, or 1.90 Mlb of halibut to the Area 2C charter sector, respectively (see Table 4). The 1.43 Mlb allocated under Option 2(a) would not cover the charter sector's projected needs. They are projected to be over their allocation when the program would be implemented. Option 2(b) allocates the charter sector enough halibut, if they have lower growth in their harvest, to be under the allocation until 2011. They would be required to stop retaining halibut before the traditional end of the charter season every year if they have the higher harvest growth rate. Option 2(c) is projected to provide enough halibut to keep the Area 2C charter sector under their allocation until 2010 or 2013, depending on the harvest growth rate.

In Area 3A, the charter sector would be allocated 3.65 Mlb, 4.01 Mlb, or 4.15 Mlb, depending on the allocation alternative. The allocation of 3.65 Mlb is not expected to provide sufficient halibut to allow the charter sector to have a complete fishing year after it is implemented. The other options would result in a harvest closure between 2009 and 2012 depending on the harvest growth rate. In general the allocations being considered are less of a constraint in 3A than in 2C. Given, the potential for future reductions in the Area 2C CEY through use of a coastwide model instead of the closed-area model, the negative impacts on the Area 2C charter sector could be greatest. The following is excerpted from Clark and Hare (2006):

> *"Growing concerns about net migration from the western to the eastern Gulf of Alaska have led the staff to doubt the accuracy of the closed-area assessments that have been done for many years. A*

coastwide assessment with survey apportionment was presented to the IPHC, in addition to the closed-area assessments, and was used to calculate the available yield in each area. The two assessments produced very similar estimates of total abundance (total exploitable biomass about 400 M lb, total available yield about 80 M lb) but the distribution among areas was quite different, with the coastwide assessment showing more biomass and available yield in Areas 3B and 4 than the closed-area assessments and less in Area 2. Area 3A is about the same in both assessments."

Table 4 Pounds of halibut allocated to the charter sector under Option 2 and amount they are over that allocation by year, 2006-2015.

	Mlb over alt. "a"		Mlb over alt. "b"		Mlb over alt. "c"	
Year	Low	High	Low	High	Low	High
IPHC Area 2C						
Initial Allocation	**1.43 Mlb**		**1.69 Mlb**		**1.90 Mlb**	
2006	0.60	0.60	0.34	0.34	0.14	0.14
2007	0.19	0.41	(0.07)	0.15	(0.28)	(0.05)
2008	0.02	0.27	(0.24)	0.01	(0.44)	(0.20)
2009	0.12	0.46	(0.14)	0.20	(0.34)	(0.00)
2010	0.23	0.69	(0.03)	0.43	(0.24)	0.22
2011	0.34	0.93	0.08	0.67	(0.12)	0.47
2012	0.46	1.21	0.20	0.95	(0.00)	0.74
2013	0.59	1.52	0.33	1.26	0.13	1.05
2014	0.73	1.86	0.47	1.60	0.27	1.40
2015	0.88	2.25	0.62	1.99	0.41	1.78
IPHC Area 3A						
Initial Allocation	**3.65 Mlb**		**4.01 Mlb**		**4.15 Mlb**	
2006	0.30	0.30	(0.06)	(0.06)	(0.20)	(0.20)
2007	(0.01)	0.05	(0.38)	(0.31)	(0.51)	(0.45)
2008	0.10	0.22	(0.27)	(0.14)	(0.40)	(0.28)
2009	0.21	0.41	(0.15)	0.04	(0.29)	(0.09)
2010	0.33	0.60	(0.03)	0.24	(0.17)	0.10
2011	0.45	0.80	0.09	0.44	(0.05)	0.30
2012	0.57	1.01	0.21	0.65	0.07	0.51
2013	0.70	1.23	0.34	0.87	0.20	0.73
2014	0.83	1.46	0.47	1.10	0.33	0.96
2015	0.97	1.70	0.60	1.34	0.47	1.20

Source: NEI projections of future charter harvest and the Council allocation alternatives estimated using ADF&G harvest data.

Using the projections of the difference between the charter allocation and their projected status quo harvest, estimates of when the charter sector would be prohibited from retaining halibut were generated. The analysts assumed that the charter sector would continue to harvest the same percentage of their total catch by week in the future as they did in 2006. Comparing the cumulative weekly harvest percentage from 2006 to the percentage of the projected harvest the sector is allocated, the week the charter fishery is projected to be prohibited from retaining halibut is estimated.

The week that a prohibition on retention of halibut by charter clients is projected to occur in Area 2C is shown in Table 5. The information shown in that table, under a low charter harvest growth rate, indicates that the more restrictive alternatives could limit retention of halibut by end of July in 2007. When the projection is extended to 2015 the prohibition on retaining halibut could start as soon as the week of July 10th. Under the higher growth rate in halibut harvests the retention closure date is shifted up to as early as mid-July. All of the alternatives result in retention being limited at some point in the year, except Option 2(c). Under the higher harvest growth rates, retention might be limited as soon as the last week of June. These early closures would limit charter trips for visitors to Alaska that come later in the year. The potential for a closure to limit client's ability to harvest halibut is expected to result in clients booking trips earlier and earlier in the year. The discounted trips that were offered late in the year would likely be

eliminated, and depending on how much demand shifted to earlier in the year, the early season discounted trips may also not be offered.

Closing the fishery to harvest as early as June could result in some members of the charter sector filling the closure time with other activities. Those activities could include salmon fishing trips, catch and release halibut fishing, sightseeing, or targeting other saltwater fisheries. The amount of effort that moves to other activities will depend on the individual operator's willingness to diversify their business and their ability to attract clients.

Table 5 Projected week the Area 2C charter fishery will be prohibited from retaining halibut.

% of charter allocation					Week Fishery Projected to Close			
Option 1	**Low**		**High**		**Low**		**High**	
	2007	**2015**	**2007**	**2015**	**2007**	**2015**	**2007**	**2015**
a	80%	56%	70%	35%	31-Jul	10-Jul	24-Jul	26-Jun
b	101%	71%	89%	44%	n/a	24-Jul	14-Aug	3-Jul
c	106%	74%	93%	47%	n/a	31-Jul	21-Aug	3-Jul
d	72%	50%	63%	32%	31-Jul	10-Jul	17-Jul	26-Jun
e	88%	61%	77%	39%	14-Aug	17-Jul	31-Jul	3-Jul
f	93%	65%	82%	41%	21-Aug	24-Jul	7-Aug	3-Jul
Option 2								
a	88%	62%	78%	39%	14-Aug	17-Jul	31-Jul	3-Jul
b	104%	73%	92%	46%	n/a	31-Jul	14-Aug	3-Jul
c	117%	82%	103%	52%	n/a	7-Aug	n/a	10-Jul

Source: ADF&G 2006 weekly charter harvest data and estimates of the amount the charter sector is over (under) their allocation.

In Area 3A, the charter sector is projected to exceed their allocation on 2007 only Option 2(a) (Table 6). The retention of halibut is projected to be allowed until the first week of September. If the high harvest growth rate is realized, the closure could be as early as mid-July or as late as early August.

Table 6 Estimates of when the 3A charter fishery may close under the proposed allocation alternatives

% of charter allocation over the cap					Week Fishery Projected to Close			
	Low		**High**		**Low**		**High**	
Option 1	**2007**	**2015**	**2007**	**2015**	**2007**	**2015**	**2007**	**2015**
a	115%	91%	113%	78%	n/a	14-Aug	n/a	24-Jul
b	130%	103%	128%	88%	n/a	n/a	n/a	7-Aug
c	127%	100%	125%	86%	n/a	n/a	n/a	7-Aug
d	104%	82%	103%	71%	n/a	31-Jul	n/a	17-Jul
e	105%	83%	103%	71%	n/a	31-Jul	n/a	17-Jul
f	104%	82%	102%	71%	n/a	31-Jul	n/a	17-Jul
Option 2								
a	100%	79%	99%	68%	n/a	24-Jul	4-Sep	17-Jul
b	110%	87%	108%	75%	n/a	7-Aug	n/a	24-Jul
c	114%	90%	112%	78%	n/a	14-Aug	n/a	24-Jul

Source: ADF&G 2006 weekly charter harvest data and estimates of the amount the charter sector is over (under) their allocation.

If we assume that the charter trip prices are not affected by the imposition of the harvest limit and the pounds of halibut per trip is constant at 2004 levels, estimates of reductions in charter revenue can be made. Table 7 shows the gross revenue reduction the charter sector is expected to realize. Because the proposed allocations are most restrictive for the Area 2C businesses and the Area 2C trip historically command a higher price, the gross revenue reductions greatest in Area 2C. Gross revenue reductions are

projected to range from $8.8 million to $117.2 million over the years 2009 through 2015. In area 3A the reduction in gross revenue could range from $0 to $51 million depending on the option selected.

It is important to note that the analysis of gross revenue does not provide any insights into the net benefits that charter operators derive from that income. We assume that because the charter operators compete with a large number of similar business for clients they generate no producer surplus, or it is very limited.

Table 7 Estimates of total charter income reductions (Million $) compared to the status quo during the years 2009-2015 as a result of imposing harvest limits.

	Area 2C				Area 3A			
	Option 1		Option 2		Option 1		Option 2	
	Low	High	Low	High	Low	High	Low	High
a	$46.45	$106.68	$36.49	$96.72	$ 6.71	$25.84	$28.97	$51.57
b	$21.95	$ 81.32	$18.56	$76.98	$ -	$ 8.23	$12.16	$33.42
c	$17.00	$ 74.79	$ 8.77	$61.42	$ 0.02	$11.12	$ 7.62	$27.20
d	$56.98	$117.22			$21.72	$44.88		
e	$37.42	$ 97.65			$20.68	$43.69		
f	$30.97	$ 91.20			$22.47	$45.74		

Assumptions: The average client would harvest 25.81 lbs of halibut per trip in 2C (from 2004 ADF&G data, 1.75 Mlb of harvest divided by 67,803 clients) and 31.46 lbs of halibut in 3A (from 2004 ADF&G data, 3.67 Mlb of harvest divided by 116,670 clients). The average charter trip cost $280 in 2C and $225 in 3A. The NEI estimates of future charter harvests hold for 2006-2015. The Fishery CEY is constant at 2006 levels.

Projected Area 2C charter sector harvests indicate that without additional regulations the charter sector would annually increase their catch by about 6.8% under the low growth option. Under the high growth option they are projected to increase their harvest by about 11.7% per year. Assuming those charter harvest growth estimates, a stable fishery CEY, and the 2006 commercial ex-vessel price of $3.72 per pound, the change in ex-vessel revenue is estimated for the commercial sector. The projected change in ex-vessel revenue assumes that the quantity of Alaskan halibut harvested does not impact the ex-vessel price. Herrmann and Criddle (2006) report that changes in the quantity of commercial Alaskan halibut landings have a relatively small impact on ex-vessel prices. They report that a 1% increase (decrease) in the quantity of Alaskan halibut landed will decrease (increase) the ex-vessel price by 0.09%, all else being equal. Given the magnitude of change in total halibut landings and the price-flexibility of halibut, for simplicity, the small expected increases in ex-vessel price were assumed away.

The changes in gross revenue generated by the commercial sector as a result of limiting charter harvests are reported in Table 8. It shows the Area 2C commercial sector would increase their ex-vessel revenue by $3.0 million to $40.2 million depending on the reduction in charter catch over the years 2009-2015. In Area 2A, the projected increase in ex-vessel revenue ranges from $0 to $26.7 million. As with the charter sector these estimates do not reflect the increase in benefits the sector derives from the allocation. However, even though the revenues are smaller, the producer surplus in the commercial sector could be larger than the charter sector's, because the commercial sector can take advantage of reduced harvest costs by having an individual allocation.

Table 8 Increase in ex-vessel revenue for the years 2009–2015 when the charter allocation options are implemented, compared to the status quo.

	Area 2C				Area 3A			
	Option 1		Option 2		Option 1		Option 2	
	Low	High	Low	High	Low	High	Low	High
a	$15.93	$36.58	$12.51	$33.17	$ 3.47	$13.37	$14.99	$26.68
b	$ 7.53	$27.89	$ 6.36	$26.40	$ -	$ 4.26	$ 6.29	$17.29
c	$ 5.83	$25.65	$ 3.01	$21.06	$ 0.01	$ 5.75	$ 3.94	$14.07
d	$19.54	$40.19			$11.24	$23.22		
e	$12.83	$33.48			$10.70	$22.60		
f	$10.62	$31.27			$11.62	$23.66		

Assumptions: Poundage decreases (increases) are the same magnitude as the charter increases (decreases). They changes were calculated as the difference between the projected charter harvest and the 2006 charter harvest. Ex-vessel revenue changers were calculated by multiplying the change in catch by the reported 2006 ex-vessel price ($3.70 per pound).
Source: NEI charter harvest estimates.

Finally, it is important to note that it is not appropriate to compare projected changes in charter revenues with projected changes to commercial ex-vessel revenue to determine which allocation is superior. Some of the reasons the compairison is not appropriate are:

- Both estimates only consider the gross revenue generated by the sectors. Net revenues are a more appropriate comparision for the two sectors, but cost data are not available to generate those estiamtes. Because of the composition and structure of the charter sector, it is assumed that they are unable to generate producer surplus in the long-term. Commerial harvesters operating under an IFQ program, that did not have to buy all of their QS, will likely be able to generate some producer surplus.
- Gross revenue estimates for the charter and commercial sectors do not consider the well-being of charter clients or halibut consumers. Criddle et al (2003) found that charter clients and halibut consumers generated a larger consumer surplus than producer surplus generated by the charter operators and commercial harvesters. Therefore, the surplus from the charter clients and halibut consumers will likely determine which sector generates the greatest benefit to society. Those estimates for the two sectors cannot be provided.
- Policy makers may have social or political reasons to implement an option that does not generate the greatest economic benefits. There are often valid reasons to consider the impact ta decision will have on other parts of society. For example, Central Park in New York City could be used for homes or businesses and the city could generate more revenue, but the citizens value the park for its recreational activites and the natural scenery it provides in the large urban landscape. Therefore, the area remains a park. If for social reasons policy makers determine that one sector should have more or less halibut, they have the latitude to make that allocation under the MSA.

Suboptions: Two suboptions are being considered that alter the number of pounds of halibut allocated to the charter sector under Option 2 if the CEY changes from the base period by a predefined percentage. The effect of the suboptions is to cause Option 2 to behave much like Option 1. Instead of a fixed percentage allocation, the charter allocation moves in "steps" with changes in the CEY. The overall result is that the charter allocation amounts (and the overall impacts) are much closer to those under Option 1 than under Option 2.

It is important to note that the CEYs used in this section are the historic CEYs calculated and used those years. The IPHC is considering using a coastwide assessment instead of a closed-area assessment. The

effects of migration on the closed-area model, used historically, tend to overestimate the halibut in IPHC area 2C and under-estimate the halibut in IPHC area 3A (Clark and Hare, 2006). Changing the assessment method to a coast-wide model could result in the 2C step-down being triggered sooner. **Because the method of calculating the CEY could result in allocation changes under these suboptions, it is important the Council state their intent regarding which CEYs should be used to calculate the historic average for the three time periods being considered if the program is implemented**. If the historic CEYs are used, the information in the following tables show the future CEYs that would trigger a change in the allocation. Alternatively, the Council could request that CEYs be recalculated using the coastwide method, if the IPHC implements that approach to calculate the CEY. If the historic CEYs are updated, the tables will need to be revised to reflect the new historic average CEY.

Once the base period is defined, future CEYs can be compared to the base CEY to determine whether the CEY has changed the required amount. If the baseline average CEY has changed the specified amount, the charter sector's allocation would be increased or decreased by the percentages listed in suboptions i or ii.

Table 9 reports that the average baseline CEYs are 11.80 Mlb under Option 2(a), 11.72 Mlb under Option 2(b), and 12.40 Mlb under Option 2 (c). Using those baseline CEYs the future CEYs that would trigger changes in the charter sector's allocation are reported in the left half of table. Note that any future CEY that is between 85% and 115% of the baseline CEY would not result in a change in the charter allocation. CEY changes that are more than 15% of the baseline CEY would result in a change in the allocation.

Table 9 Hypothetical changes in IPHC area 2C CEYs and the impact the changes would have on the charter sector's annual allocation.

	1995-1999	2000-2004	2001-2005	1995-1999	2000-2004	2001-2005
	Avgerage CEY (Mlb)			Initial Allocation (Mlb)		
	11.80	11.72	12.40	1.43	1.69	1.90
Percentage of Average CEY	Future CEY levels that would trigger a change in charter allocation (Mlb)			New Allocation Resulting from Change in CEY (Mlb)		
0% - 15%	1.77	1.76	1.86	0.21	0.25	0.28
15.01% - 25%	2.95	2.93	3.10	0.36	0.42	0.47
25.01% - 35%	4.13	4.10	4.34	0.50	0.59	0.66
35.01% - 45%	5.31	5.27	5.58	0.64	0.76	0.85
45.01% - 55%	6.49	6.44	6.82	0.79	0.93	1.04
55.01% - 65%	7.67	7.62	8.06	0.93	1.10	1.23
65.01% - 75%	8.85	8.79	9.30	1.07	1.27	1.42
75.01% - 85%	10.03	9.96	10.54	1.22	1.44	1.61
85.01% -114.99%				1.43	1.69	1.90
115% - 124.99%	13.57	13.47	14.26	1.65	1.95	2.18
125% - 134.99%	14.75	14.65	15.50	1.79	2.12	2.37
135% - 144.99%	15.93	15.82	16.73	1.93	2.28	2.56
145% - 154.99%	17.11	16.99	17.97	2.08	2.45	2.75
155% - 164.99%	18.29	18.16	19.21	2.22	2.62	2.94
165% - 174.99%	19.47	19.33	20.45	2.36	2.79	3.13
175% - 184.99%	20.65	20.50	21.69	2.51	2.96	3.32
185% - 194.99%	21.83	21.67	22.93	2.65	3.13	3.51
195% - 204.99%	23.01	22.85	24.17	2.79	3.30	3.70

Source: IPHC annual CEY data.

The average baseline CEYs for IPHC area 3A were calculated to be 30.70 Mlb under Option 2(a), 30.34 Mlb under Option 2(b), and 32.00 Mlb under Option 2(c). Those CEY amounts are used as the baseline to determine if the future Area CEY has changed a sufficient amount to trigger an adjustment in the

charter sector's allocation. Table 10 reports the CEY levels that would result in a change in the charter sector's allocation and the allocation in millions of pounds.

It should be noted that the allocation would continue to increase at 10% intervals if the CEY exceeded 205% of the average baseline CEY. Because the charter sector allocation increases about 0.37 Mlb, 0.40 Mlb, and 0.41 Mlb, under Options 2(a) through Options 2(c), respectively, for each 10% increase above the average baseline, larger CEY increases than are shown in Table 10 can be estimated relatively easily.

Table 10 Hypothetical changes in IPHC area 3A CEYs and the impact the changes would have on the charter sector's annual allocation

	1995-1999	2000-2004	2001-2005	1995-1999	2000-2004	2001-2005
	Average CEY (Mlb)			Initial Allocation (Mlb)		
	30.70	30.34	32.00	3.65	4.01	4.15
Percentage of Average CEY	Future CEY levels that would trigger a change in charter allocation (Mlb)			New Allocation Resulting from Change in CEY (Mlb)		
0% - 15%	4.61	4.55	4.80	0.55	0.60	0.62
15.01% - 25%	7.68	7.59	8.00	0.91	1.00	1.04
25.01% - 35%	10.75	10.62	11.20	1.28	1.40	1.45
35.01% - 45%	13.82	13.65	14.40	1.64	1.80	1.87
45.01% - 55%	16.89	16.69	17.60	2.01	2.21	2.28
55.01% - 65%	19.96	19.72	20.80	2.37	2.61	2.70
65.01% - 75%	23.03	22.76	24.00	2.74	3.01	3.11
75.01% - 85%	26.10	25.79	27.20	3.10	3.41	3.53
85.01% -114.99%				3.65	4.01	4.15
115% - 124.99%	35.31	34.89	36.80	4.19	4.61	4.77
125% - 134.99%	38.38	37.93	40.00	4.56	5.01	5.18
135% - 144.99%	41.45	40.96	43.20	4.92	5.41	5.60
145% - 154.99%	44.52	44.00	46.40	5.29	5.81	6.01
155% - 164.99%	47.59	47.03	49.60	5.65	6.22	6.43
165% - 174.99%	50.66	50.06	52.80	6.02	6.62	6.84
175% - 184.99%	53.73	53.10	56.00	6.38	7.02	7.26
185% - 194.99%	56.80	56.13	59.20	6.75	7.42	7.67
195% - 204.99%	59.87	59.17	62.40	7.11	7.82	8.09

Source: IPHC annual CEY data.

When the average CEY is compared to the 2007 CEY for IPHC area 2C, the 2007 CEY is between 87% and 92% of the average CEY for each alternative. That level of change from the initial CEY would not reduce the initial 2C allocation. In Area 3A, the 2007 CEY is larger than the historic average CEYs being considered. Because the CEY increase is less than 115% of the historic average under Option 2(c), the charter sector would receive 100% of their initial allocation. Under Option 2(a) and Option 2(b) the 2007 CEY is between 115% and 125% of the historic average CEY so the charter sector would be allocated 115% of their initial allocation.

Expected Effect of Action 1 Alternative 1 (Sector Allocation)

Under the Status Quo the charter sector is expected to increase the total number of trips taken by clients and the total pound of halibut harvested. The Status Quo is defined as the management measures currently in regulation and the measures that have been approved by the Council but not yet implemented. Management currently included in the Status Quo include the moratorium on new entry into the charter sector, a two fish bag limit, and four fish possession limit. The Council and NMFS have also taken action to reduce the current charter harvests in IPHC Area 2C. According to the Council's June 2007

Newsletter, during 2007 the Council and NMFS have implemented or proposed the following amendment for halibut fishery in IPHC Area 2C:

- NMFS has implemented a regulation that one of two fish in the daily bag limit must be less than or equal to 32 inches (effective June 1, 2007)
- The Council recommended that the halibut charter regulations be revised for 2008 to include:
  1. No charter halibut harvest by skipper and crew (currently a State regulation);
  2. line limits of six per vessel, not to exceed the number of paying clients on board (currently a State regulation);
  3. An annual limit of four fish per angler.

At its October 2007 meeting the Council is expected to review proposed measures to control charter harvests of halibut in IPHC area 3A. Options being considered include:

- One trip per day;
- No harvest by skipper and crew and line limits;
- Annual limit of four, five, or six fish per angler;
- Reduced bag limits of one fish per day for May, June, July, August, or the entire season;
- Two fish daily bag limit, with one fish any size and one fish larger than 45" or 50";
- Two fish daily bag limit, with one fish any size and one fish less than 32", 34", or 36";
- Two fish daily bag limit, with one fish any size and one fish less than 32" or larger than 45" or 50".

Even with the management measures currently in regulation or approved by the Council, the charter sector is expected to realize an increase in client demand for sport fishing trips, which is expected to increase the total pounds of charter halibut harvested. While the moratorium will limit new entry into the charter sector, a sufficient number of permits are expected to be issued to cause charter operators to compete for the available clients. Charter operators are expected to have the ability to increase effort under the moratorium by taking more trips with their qualified vessels or carrying more clients per trip, on average. Based on these expectations, and the assumption that the fishery CEY will be fairly stable, the following conclusions are drawn[6].

- Charter operators are assumed to behave as perfect competitors (the proposed moratorium will limit new entry but the persons holding the permits will compete for clients because they will have excess capacity on their vessels over the time period considered in this analysis), so the increase in demand will result in increased angler surplus.
- Charter prices could increase in the short-run, but competition for clients will bid the price of trips down in the long-run to where operators are making normal profits. Therefore, the charter operators are not expected earn any producer surplus in the long-run.
- The reduction in the commercial harvest will result in small increases in the ex-vessel price of commercial halibut. The increase in ex-vessel price is not expected to offset the reduction in income that is associated with harvesting fewer halibut.
- Because the value of QS is determined by the net present value of future harvests, the price of Area 2C and Area 3A commercial QS is expected to decline. The price decrease would be due to the fact that the decrease revenue resulting from harvesting fewer halibut is not offset by ex-vessel price increases.

[6] Many of the conclusions are based on work by Criddle et al (2003), Criddle (2004 and 2006), and Hermann and Criddle, 2006).

- Producer surplus generated by the commercial sector is expected to decline as a result of the decrease in quantity harvested. IFQ holders are expected to generate some producer surplus because they were issued the privilege to harvest an annually defined number of pounds of halibut. The cost savings associated with when, where, and how to fish should allow them to earn above normal profits. Persons that had to buy their QS are expected to have higher costs (the price of the QS), may not earn above normal profits.
- Reducing the total amount of halibut available to the commercial sector is expected cause additional consolidation of QS holdings. Marginal commercial QS holders are expected to sell their holdings to lower cost producers because the increased charter harvest reduces the pounds of IFQ (and net revenue) derived from their QS.
- Consumer surplus of halibut consumers will decrease because less halibut is available on the market. Because consumer surplus is expected to be a substantial portion of the total surplus, the reduction in consumer surplus may result in the net National benefits declining.
- Communities will be impacted when the distribution of catch between to the two sectors changes. Communities that are more dependent on charter businesses will benefit from increased charter harvests, communities that are more dependent on commercial harvests will be harmed. However, most communities are dependent on both sectors so the increases in activity by one sector will, to some extent, offset the reductions by the other sector.

Expected Effect of Action 1, Alternative 2 (Sector Allocation)

Option 1 and Option 2 would limit the total amount of halibut that the charter sector may harvest. All of the alternatives are expected to constrain charter harvests by about 2015 or before. Because the charter allocations are expected to constrain charter harvests the impacts of the alternatives will be different than the Status Quo alternative. The expected impacts on the various sectors are discussed below. Again, many of these results were described in the paper prepared in 2006 by Criddle.

- Competition for clients will cause charter operators to compete by increasing the quality of the service they provide or by reducing the price per trip. Assuming that charter operators are all providing fairly uniform, high quality trips for clients, the charter operators will compete based on trip prices.
- In the short-run increased demand for trips could result in an increase in trip prices, but over the long run competition for clients and the race to book clients while halibut is available will cause charter operators to bid down the price to a level where charter operations are making normal profits and have do not generate any producer surplus.
- The moratorium may slow the rate profits are decreased, but the excess capacity in the fleet will prevent the charter operators from having sufficient power to halt the dispersal of net benefits.
- Once the charter is constrained by their allocation, the commercial sector will not be impacted after the constraint takes affect. Because many of the alternatives do allow for some increased harvest by the charter sector, the commercial sector will be impacts like under the status quo to that point.
- Option 1 alternatives set the charter allocation as a percentage of the Fishery CEY. Therefore increases in the Fishery CEY increases the total amount of halibut the charter sector and the commercial sector may harvest. Under Option 1, increases in the Fishery CEY will benefit charter operators if they are constrained by the cap. They would be allowed to take additional trips, which would increase net revenue for the fleet and increase angler surplus. The commercial sector would also benefit from additional halibut. They would be expected to increase net revenues, consumer surplus, and QS values. If they will not harvest their allocation at the lower CEY, the additional halibut generate no benefits. If there is not a mechanism to transfer the unused halibut to the commercial sector they would stay in the water and, depending on the amount, slightly increase the Fishery CEY the following year. A decrease in the CEY would have the opposite impacts. The

charter sector would be more constrained by the decrease in halibut. They could offer fewer trips and the season when halibut could be retained would end sooner. This would decrease both charter net revenue and angler surplus. Commercial net revenue, consumer surplus, and QS values would also decline if the decline in catch is thought to extend over a long period of time.

- Option 2 would allocate a fixed number of pounds to the charter sector. The charter sector would not be affected by changes in the Fishery CEY. The commercial sector would be impacted in the same ways as described under Option 1 except the magnitude of the impacts would be larger.
- It is not possible to determine with certainty whether the redistribution of the Fishery CEY will increase or decrease total net benefits.
- Imposing a limit on charter harvests will result in a race for clients to take trips earlier in the year while halibut is available. The increased demand for early season trips will cause the halibut charter allocation to be taken earlier and earlier in the year.

Communities will be impacted as discussed under the Status Quo with one exception. Communities that are positioned to take advantage of the shift to earlier trip dates will benefit over those that are less able to attract clients earlier in the year. Historic harvest data by port in 2006 indicated that this will disadvantage the smaller more rural communities that may not start offering trip until a month after the more accessible communities begin providing trips to clients.

Expected Effect of Action 2, Alternatives 2 and 3 (Compensated Reallocation)

Further Reorganization of the Alternatives
Staff requests that the Council consider further reorganization into the following suite of alternatives:

- Individual Management
- Federal Common Pool
- State Common Pool
- Regional Non-Profit Association Common Pool

Alternative 2 and 3 contain two approaches that allow compensated reallocation shifts between the halibut commercial and charter sectors to occur. They include the development of a common pool management system and the development of an individual private management system, respectively. Three options examine potential common pool management systems: (1) Federal Common Pool; (2) State Common Pool; or (3) Regional Non-Profit Association Common Pool. Table 11 summarizes the results of the analysis for each of the four suboptions. The authors note the each suboption could be regarded as a stand-alone option for the Council to consider and that future analysis could be made cognitively simpler by considering each suboption as a stand alone alternative.

Every common pool management option analyzed would require legislative changes through an external federal and/or state legislative process plus a regulatory amendment to the Halibut IFQ program. This requirement places portions of the final program outside the Council process. On the other hand, the individual management alternative would require a regulatory amendment to the Halibut IFQ program, but does not appear to definitively require a legislative change. Thus, the analysis concludes that this alternative is the only analyzed approach with the potential to meet the Council's problem statement while staying solely within the Council process. This alternative does raise the issue of whether (and how) the initial allocation of to the charter sector will be divided between charter operators. Additionally, the analysis encountered a series of overarching issues that are likely to affect the implementation of both a common pool management system and an individual management system. Further explanation of these overarching issues is located at the end of the Executive Summary. The full summary of the analytical results follow Table 11 and Table 12.

Table 11 Summary Comments on Elements and Options

Element	Option	Common Pool Options			Individual Management Option
		Federal Common Pool	State Common Pool	Regional Non-Profit Association Common Pool	
Element 1.1	Holding QS	May/may not require a regulatory change	Change in QS holding regulations required.	Change in QS holding regulations required State of Alaska legislation required	Change in QS holding regulations required if operator does not meet current requirements
	Loan Programs	Federal legislative action required to access existing programs.	SOA legislative changes required to access existing programs.	Private loans likely the best option. Legislative changes required to access other non-private loan programs.	Private loans likely the best option. Legislative changes required to access federal and SOA loan programs.
	Buyout Program	Federal legislative action required	N/A	N/A	N/A
	Bonding	N/A	SOA legislative changes required	N/A	N/A
Element 1.2	Charter Stamp	Federal legislative action required to create a charter stamp.	Dedicated halibut charter stamp not possible without state management authority. State saltwater charter stamp would require legislative changes and would not guarantee program funding.	N/A	The revenue stream for the individual management is likely to come from the individual operator's business revenues. The surcharges necessary to cover loan repayments will likely be equal to the per client fees calculated for the common pool options.
	Sportfishing License Surcharge	N/A	SOA legislative changes required	N/A	
	Moratorium Permit Fee	A moratorium permit fee requires legislative change as current federal law only allows NOAA to collect fees associated with individual fishing privileges	N/A	N/A	
	Self-Assessment Fee	A per unit fee would require a legislative change as current federal law only allows NOAA to collect fees associated with individual fishing privileges	N/A	Right to self-tax would need to be part of the legislative package creating the RNPA.	
	Business License Fee	Not Analyzed	Per unit fee would require a legislative action.	Not Analyzed	
Element 2.1	Limits on Transferability	Transferability limits would create allocation "floors" for both sectors. If recent long-term trends in charter halibut harvest persist, the transferability limits create an effective cap on the size of the charter sector..			
Element 2.2	Limits on Purchase	Purchase limits will make implementation of the common pool program more difficult as the charter sector's need for QS units are a substantial portion of the average annual trading volume in the QS market. Restrictions based on blocked units and vessel classes may protect entry-level anglers to some degree, but will also exacerbate the potential market effects of the compensated reallocation. Price effects resulting from the compensated reallocation are likely to raise prices for all classes of QS regardless of restrictions.			
Element 2.3	Limits on Leasing	Leasing restrictions lower the incentive to purchase more QS than an individual or entity can reasonably use. However, allowing leasing could help alleviate the execution issues noted in the limits on purchase analysis. Leasing limits in this analysis conflict with proposed ownership limits.			

Table 12 Summary of Overarching Issues

Issue	Common Pool Management Regime	Individual Ownership Regime
Transition Issues	Effectively transitioning from the current system to a common pool system will be a challenge in part because the amount of QS required by the charter industry in the future is a significant portion of the annual QS trading volume. For example, the estimated amount of QS required to support the charter industry in Area 2C in 2010 is between 33% and 100% of the current average annual trading volume between 2001 and 2006. This raises the question of how to purchase this much quota share while minimizing market disruptions and ensuring that both sectors have the QS they need to meet demand.	The largest transition issue associated with the individual management regime is likely to be how the initial allocation to the sector is divided between qualifying charter participants. Failure to divide the initial allocation will result in a race for fish during the period when all operators fish the common pool.
Common Pool vs. Individual Ownership	There are a number of important differences between the common pool management regimes and the individual management regimes. First, in a common pool management regime there is a disconnect between the marginal cost of harvesting another fish (borne by the common pool) and the marginal benefit of harvesting another fish or taking another client (benefits the individual operator). Hence, there is no automatic connection between the purchaser of QS and the individual who derives benefits from the QS. Second, the creation of the common pool purchaser of QS will create a disproportionately large player in the QS market. This new common pool player will be many times larger than the other players in the market and may hold a certain amount of market power. Individual management regimes ensure that the maximum size for charter players and commercial players is roughly the same.	
In-Season Management	The analysis concludes that improved in-season management systems will be needed to effectively manage both the common pool and individual management options. The common pool manager will have a vested interest in ensuring accurate in-season tracking. Since the individual charter operators will not hold QS, it is impossible for them to harvest in excess of an IFQ. However, the common pool manager will be a QS holder and would potentially be subject to sanctions or penalties if the operators in aggregate exceed the TAC for the pool. Hence, the pool manager will be incentivized to know exactly how many GAF the individual operators have harvested if just to avoid violating the law. In-season management for an individual management regime will be necessary for any real time enforcement of QS violations by charter operators.	

Expected Effects of Alternative 2 (Common Pool Management)

This section discusses the elements of potential common pool management regimes. These options would allow a Federal, state, or regional non-profit entity to hold QS in trust for charter operators and all would require some level of legislative action outside the Council process. This entity would also likely be responsible for entering into the market to purchased additional QS, if and as needed. This responsibility means that the common pool entity must have an accurate gauge of the charter sector's harvest; otherwise, the actions of individual operators could result in greater harvest than the entity has QS to support.

The following sub-sections described how the entity would hold QS, fund the compensated reallocation, generate revenue, and what limitation would be placed on transfers between the entity and commercial operators.

Element 1.1 Holder and Method of Funding

This section outlines a number of suboptions whereby QS/IFQ would be purchased and held by an entity on behalf of a common pool of charter operators in the individual regions of 2C and 3A. Three possible entities are considered:

1. Federal Common Pool
    i. option 1. loan
    ii. option 2. buyout program
2. State of Alaska Common Pool
    i. option 1. loan
    ii. option 2. bonding
3. Regional Non-Profit Association Common Pool
    i. option 1. loan

This analysis found that:

- The feasibility of a Federal Common Pool Entity cannot be determined at this time. The analysis talked with NOAA GC staff about whether this arrangement would be supported by current legislation and concludes that this question cannot be answered definitively until a more detailed description of the precise aspects of the program is provided. Both the North Pacific Loan Program and the Fishery Capacity Reduction Program authorized by the MSA would require legislative action before they could be used within a common pool management regime.
- This State of Alaska Common Pool Entity would require the promulgation of new regulations under the Northern Pacific Halibut Act as the State of Alaska does not currently meet QS holder qualifications. It is also likely that the state would prefer having the responsibility and statutory authority to manage the charter halibut fishery before agreeing to hold halibut QS/IFQ in trust for the charter sector, although this may not be a necessary condition.[7] The delegation of authority to the State of Alaska to regulate charter fishing for halibut would require an amendment by Congress to the Northern Pacific Halibut Act. In April 2007, the NPFMC rejected a motion to support such an amendment. Ginter (2006) discusses the effects of providing authority to state governments to manage sport halibut fisheries. The state maintains a number of programs such as the Small Business Economic Development Revolving Loan Fund, which might be used to help fund a common pool program. However, these programs will require legislative changes or action on the state level.
- A regional non-profit association (RNPA) consisting of participants in the halibut charter fishery would hold halibut QS/IFQ on behalf of the common pool of charter operators and could be modeled after existing regional non-profit associations created under State of Alaska statutes. For example, AS 16.10.380 allows the formation of a Regional Aquaculture Association for the purpose of enhancing salmon production, while AS 44.33.065 allows the formation of a Regional Seafood Development Association for the purpose of marketing and promoting seafood products. Both of these types of associations have the statutory authority to conduct elections for a region's permit holders to vote on a self-imposed state tax. The NPFMC's June Motion outlines one option for the RNPA: a loan program. A loan would have to originate from a federal, state, or private source. The federal and state loan programs outlined above would require legislative changes in order to make an RNPA an eligible borrower.

Element 1.2 Revenue Stream

Element 1.2 defines the revenue stream that would be used to pay back any debt associated with the compensated reallocation. The options considered include:

1. Federal Common Pool
    - option 1. halibut charter stamp
    - option 2. moratorium permit fee
    - option 3. self-assessment fee
        - suboption 1. fee is based on number of clients
        - suboption 2. fee is based on number of fish

[7] The Alaska Board of Fisheries has adopted a management approach for some commercial fisheries that has some resemblance to an IFQ program in that a harvest limit is divided so that participants have individual shares of the catch. In 2003, for example, the Board of Fisheries adopted a "shared quota" approach for the Prince William Sound sablefish fishery, whereby half of the GHL for the fishery is allocated equally among registered participants (the balance of the GHL is allocated according to the permit's vessel size class) (Berceli et al. 2005).

2. State of Alaska Common Pool
    - option 1. charter stamp
    - option 2. sportfishing license surcharge
    - option 3. business license fee/surcharge or limited entry permit holder
        - suboption 1. fee is based on number of clients
        - suboption 2. fee is based on number of fish
3. Regional Non-Profit Association Common Pool
    - option 1. self-assessment
        - suboption 1. fee is based on number of clients
        - suboption 2. fee is based on number of fish

In general, the analysis finds that:

- How much the program will cost will depend on how much QS must be purchased and the cost of QS at the time of the purchase. For example, under 2006 harvest levels, the current GHLs, and 2006 management conditions, an Area 2C common pool would have needed to make a one-time purchase of halibut QS worth between $8.8 and $12.1 million. An Area 3A common pool would have needed between $4.7 and $6.2 million.

The "per unit" costs for each of the analyzed options will depend on the amount borrowed, the interest rate, and the length of the repayment period (if any). The analysis estimated the "per unit" costs for each option based on 2006 conditions, *an initial allocation equal to the GHL*, a ten year repayment period, and a range of interest rates. In summary, the analysis estimates that:

- A per client day fee on charter operators would cost them between $10 and $20 in Area 2C and between $5 and $10 in Area 3A.
- An annual stamp mechanism would cost between $20 and $30 per person in Area 2C and between $5 and $10 in Area 3A.
- A sportfishing license surcharge would spread the cost in both IPHC areas across all purchasers of an Alaska sport fishing licenses. This fee would add an average of $10 to $15 to the cost of a license.[8]
- A per fish harvested fee would range between $10 to $15 in Area 2C and between $5 and $10 in Area 3A.
- A flat, annual moratorium permit fee or business license fee would range from $3,200 to $5,000 in Area 2C and between $1,300 and $2,000 in Area 3A.

These estimates are only valid within the context of the analysis' assumptions. In particular, an initial allocation that differs from the current GHL will change these estimates.

With regard to management regimes, the analysis finds that:

- The Federal Common Pool contains three revenue stream options. These include a federal halibut charter stamp, a moratorium permit fee, and a self-assessment fee based on either the moratorium permit holder's number of clients or the number of fish harvested. Discussion with NOAA General Counsel (GC) staff indicated that none of the common pool revenue streams can be

[8] Note that these numbers are an average cost. The state usually has a lower than average surcharge for residents while using a higher than average surcharge for non-residents. The surcharge for the recent hatchery construction bonds ranges between $9 for residents to $45 for non-residents purchasing a full-year license.

accomplished solely through Council action. All of the options require federal legislation (Lepore 2007). The following sub-sections note the most important issues associated with each option.

- The State of Alaska Common Pool contains three revenue stream options. These include a charter stamp, a sportfishing license surcharge, and a business license fee or surcharge based on either the moratorium license holder's number of clients or the number of fish harvested. The State of Alaska would not be able to institute a halibut-only charter stamp because unlike the other recreational fisheries requiring a stamp (i.e., the king salmon fishery), the state does not manage the recreational halibut fishery. The State of Alaska has used sportfishing license surcharges to fund bonded debt in the past. The use of these surcharges would require legislative action. A Business License Fee/Surcharge or Limited Entry Permit Holder Fee would represent a tax on a business as opposed to a direct tax on the angler. The form of this tax is important as a flat tax can directly affect the competitiveness of businesses depending on whether the fee is flat or progressive.
- A regional non-profit association could establish a self-imposed state tax modeled after the Regional Aquaculture Associations and Regional Seafood Development Associations with appropriate legislative changes. These associations conduct elections for a region's permit holders to vote on a self-imposed state tax. Permit holders are allowed one ballot for each permit held. The tax is collected by the Department of Revenue and disbursed only to Regional Aquaculture Associations and Regional Seafood Development Associations by annual legislative grants through the Department of Commerce, Community, and Economic Development.[9]

Element 2.1 Limits on Transferability

Element 2.1 limits the amount of halibut quota that can be transferred between the commercial and charter fleets based on the "combined commercial and charter catch limit."[10] The limits on transferability create a minimum and maximum size to the harvest that could be used by either sector. However, given the long-term growth in the charter industry, the likely net effect of this provision would be to create a cap on the maximum size of the charter fleet and their associated harvests while creating a floor under the percentage of total harvest that the commercial fleet could access. The element defines the percentage of the combined commercial and charter catch limit that would be available for transfer between the sectors at: Option 1) 10%; Option 2) 15%; Option 3) 20%; or Option 4) 25%.

The analysis projects charter harvests forward through 2015 for both Area 2C and Area 3A. These projections reflect the status quo in both areas; including approved Council actions (see NPFMC 2007b). Additionally, the projections utilize use the long-term (i.e., 1995-2006) industry growth rates to create a lower expectation of future harvests and the five-year average growth rates to create a higher expectation of future harvests.

In Area 2C growth rates average just over 6% in the long-term and just over 11% over the past five years (see Table 13). The analysis estimates that the 10% transfer allowance could cap charter harvests as early as 2013 if Area 2C charter harvest grows at the rate seen over the past five years. The 15% suboption would allow continued growth until 2014 while a 20% transfer allowance or more would likely be needed

[9] The tax money collected by the Alaska Department of Revenue must be deposited into the state general fund and then appropriated by the Alaska Legislature because of the constitutional prohibition against dedicated funds.

[10] The analysis notes that there is no allocation which currently matches the exact wording of "combined commercial and charter catch limit." If this element is adopted, the Council may need to request that the IPHC release their harvest recommendations using this term officially. This issue was previously raised in NPFMC (2006).

after 2015. Under the slower growth rate, the Area 2C charter fleets harvest would not be capped in the analytical time frame, but would eventually be capped by this measure shortly after 2015.

Table 13 Minimum Transferable Amount Needed Based on Projected Charter Harvest Growth, Area 2C

Year	Projected Charter Harvest Mlb)		Required Transfer Amount (Mlb)		Minimum Transfer Percentage Needed	
	Low Average	High Average	Low Average	High Average	Low Average	High Average
2006	2.035	2.035	0.603	0.603	10%	10%
2007	1.622	1.846	0.190	0.414	10%	10%
2008	1.457	1.698	0.025	0.266	10%	10%
2009	1.556	1.896	0.124	0.464	10%	10%
2010	1.662	2.118	0.230	0.686	10%	10%
2011	1.776	2.365	0.344	0.933	10%	10%
2012	1.896	2.641	0.464	1.209	10%	10%
2013	2.026	2.950	0.594	1.518	10%	15%
2014	2.164	3.294	0.732	1.862	10%	15%
2015	2.311	3.679	0.879	2.247	10%	20%

Source: NEI Estimates, 2007.

In Area 3A, the analysis projects that a 10% transfer allowance cap would restrict charter harvest after 2015 given the current status quo and assuming higher growth rates (see Table 14).[11] The analysis accounts for ADF&G's 2007 emergency order banning skipper and crew harvests and again uses a lower and higher growth rate based on growth rates between 1995 and 2006 and over the last five years. Charter harvest growth has averaged 3% over the longer term and over 4% over the last five years. As in Area 2C, any limit on the amount that can flow between the sectors will likely restrict charter industry growth.

Table 14 Minimum Transferable Needs Based on Projected Charter Harvest Growth, Area 3A

Year	Projected Charter Harvest Mlb)		Required Transfer Amount (Mlb)		Minimum Transfer Percentage Needed	
	Low Average	High Average	Low Average	High Average	Low Average	High Average
2006	3.947	3.947	0.297	0.297	10%	10%
2007	3.635	3.696	-0.015	0.046	10%	10%
2008	3.745	3.871	0.095	0.221	10%	10%
2009	3.858	4.054	0.208	0.404	10%	10%
2010	3.975	4.246	0.325	0.596	10%	10%
2011	4.095	4.447	0.445	0.797	10%	10%
2012	4.219	4.657	0.569	1.007	10%	10%
2013	4.346	4.878	0.696	1.228	10%	10%
2014	4.477	5.109	0.827	1.459	10%	10%
2015	4.613	5.351	0.963	1.701	10%	10%

Source: NEI Estimates, 2007.

Limits on the amount of QS that could be transferred could result in several issues under a common pool management regime. First, the limits could result in shortened seasons for charter operators if the

[11] The status quo does not reflect any of the Area 3A management measures considered under (NPFMC 2007c) given the development nature of that management measure.

common pool utilized the maximum amounts allowed under the suboptions and total CEY dropped between years. Under this scenario, the charter fleet would be faced with less allowed harvest than it had used in prior years and no ability to step into the market to pay for more QS to make up the difference. This scenario could result in closures of the charter halibut fishery as the ability of common pool managers to limit the harvest of individual charter operators will likely be negligible. A primary management tool will have to be closure of the fishery. At the same time, under this scenario, QS holders wishing to leave the fishery when their QS were at maximum value would receive a lower price than if charter operators were allowed to come into the market. Thus, limits on transfer allowance limit the flexibility of common pool managers and QS holders wishing to sell when their QS units hold the maximum value.

Element 2.2 Limits on Purchase

Element 2.2 defines restrictions on the amount and type of QS that the common pool could purchase based on either an annual percentage of QS historically transferred and/or restrictions on vessel class sizes and QS blocks. Element 2.2 states:

> Option 1. Limited annually to a percentage (30%–50%) of the average amount of QS transferred during the previous five years.
>
> Option 2. Restrictions on vessel class sizes/blocked and unblocked/ blocks above and below sweep-up levels to leave entry size blocks available for the commercial market and to leave some larger blocks available for an individual trying to increase their poundage.
>
> Note: (These options are not intended to be mutually exclusive.)

The June 2007 motion states that Option 1 and Option 2 for purchasing QS are not mutually exclusive; limits on QS purchase could be based on a percent of historical QS transfers and/or the vessel class sizes. Irrespective if one or both options are enacted, the core of the question regarding Element 2.2 is "will there be enough QS available so halibut charter operators are able to meet their customers' halibut catch demand?" The analysis finds that:

- The charter fleet will need to purchase an amount of QS equal to a significant portion of the average annual trading volume in the QS marketplace. The magnitude of this need will depend on factors such as the initial allocation, growth in the charter sector, and the QS-to-TAC conversion ratio. However, it is conceivable that the amount of QS the charter fleet needs to purchase could exceed more than 50% of the average annual trading volume seen in recent years.
- The charter fleets QS needs are large enough that the authors expect a significant effect on QS prices.
- Any restrictions on the annual volume of common pool purchases of QS could result in a "phased-in" initiation of the program. This situation would be difficult for the charter sector under a hard cap as the common pool would not have enough QS to cover demand, which could result in the need for an in-season management restriction. It would also prolong initial price effects associated with the program.
- Entry-level commercial fishermen are the most likely to be hurt by the program without a restriction on the common pool purchasing Class D shares. At the same time, existing commercial QS holders will benefit from the increased demand for their shares and the speculative pricing pressures which will likely result as the program takes shape.

Commercial operators have expressed concern that common pool buying could limit the availability of Class D shares for entry level commercial fishermen. Class D shares are the least expensive QS units and

are designated for catcher vessels less than 35 feet in length. It would be logical for the common pool to pursue these shares since it would place the lowest financial burden on charter operators. A reliance on purchasing these shares would temporarily disrupt the availability of shares to entry level commercial fishermen because of the limited availability of Class D shares and the likely increase in price associated with these shares. Class D QS units comprised between 13% and 20% of annual QS units available for purchase between 2001 and 2006 in Area 2C. In Area 3A, Class D QS units comprise 8% to 16% of annual QS units available for purchase. Given Option 1, it is clear that the common pool would be unable to purchase enough QS shares from the regular annual Class D trade to "fully fund" the common pool and that commercial operators are justified in their expectations for price effects given the size of the charter industry's QS needs.

Element 2.3 Limits on Leasing

Element 2.3 contains a limit on common pool leasing (Item A) and a limit on leasing by commercial fishermen (Item B). These read:

A. The common pool may only lease 0%–15% of holdings back to the commercial sector.

B. Individual commercial fishermen:

   i. Commercial fishermen who do not hold a sport fishing guide business license and/or moratorium permit may lease up to 10% of their annual IFQs for use as GAF[12] on an individual basis, or to a common pool.

   ii. Commercial fishermen who hold QS and a sport fishing guide business license and/or a halibut moratorium license may convert all or a portion of their commercial QS to GAF on a yearly basis if they own and fish it themselves on their own vessel. Commercial and charter fishing may not be conducted from the same vessel during the same day.

The analysis did not have access to the data required for a quantitative analysis in time for inclusion for this version of the report.

The analysis presents the following qualitative discussions about Option A:

- Under a common pool management regime, the common pool manager will likely want to hold enough QS to ensure that the charter sector can harvest what charter clients demand without fear of activating in-season management tools that might be needed if the sector appeared to be on track to harvest more halibut than is held in within the common pool.
- How much extra QS is needed in any given year to accommodate expected industry growth and provide a buffer in the case of emergencies? The amount the common pool manager will want to hold will depend on the opportunity cost of holding extra QS. In a scenario where there is no limit on leasing, the common pool manager will worry less about having extra QS because those QS could always be leased back to the commercial sector. Limiting leasing places an additional opportunity cost on QS units held by the charter industry above the leasing limit. The common pool would be holding these QS (and likely making financing payments on them) without any way to generate revenue from them either through leasing or harvest by charter clients.
- If leasing is disallowed altogether, the common pool manager will face the choice of a) entering the spot market near the end of the charter season to purchase halibut in the case of shortfalls, or

[12] GAF = Guided Angler Fish (This is used only as a charter unit of measurement for commercial quota share converted to charter use and is not indicative) of a particular long term solution.)

b) holding more QS than will likely be needed in a given season to avoid entering the QS market at the end of the season. The first choice lowers the opportunity cost of carrying too much QS, but carries the risk of paying high prices in the QS market as a "motivated" buyer. The second choice would increase the "carrying cost" associated with carrying extra QS, but would avoid issues with in-season management and having to enter the QS market on short notice.

As noted in prior analyses such as NPFMC (2007b) and NPFMC (2007c), growth in the charter harvests is not a linear upward trend. Growth rates vary highly from year to year. Recent and reasonably foreseeable changes in management such as preferred alternatives in NPFMC (2007b) and the passage of a moratorium on new entrants will likely change or moderate growth patterns. The common pool manager will face the difficult challenge of predicting year-to-year growth under a regime where individual boats are not incentivized to limit their harvests.

Item B in Element 2.3 under a common management pool contains two leasing allowances for commercial fishermen. As described in Element 2.2: Limits on Purchase, the QS needs of the common pool are likely to be equivalent to a significant portion of the QS market's average annual trading volume. A limit on the amount the common pool could purchase in a single year could result in a short fall between the amount held by the common pool and the amount of QS needed to meet charter angler demand. Allowing commercial fishermen to lease to the common pool could provide enough QS to meet this shortfall.

The first allowance applies to those who do not hold a sport fishing guide business license and/or moratorium permit. This allowance would permit these fishermen to lease up to 10% of their annual IFQs for use as GAF on an individual basis, or to a common pool. This allowance could provide the market with important liquidity during the formative years of a mechanism allowing QS exchanges between sectors. A primary concern of commercial fishermen has been the potential for market distortions if the common pool enters the market and attempts to purchase all of the QS need by the charter sector in a short time period. Options 1 and 2 of Element 2.2 may limit the amount the common pool may purchase and, as noted in that section, these limitations may restrict the amount the common pool could purchase in the first year of operation to less than what is needed by the charter sector during that first year. The leasing allowance described above could provide more than 500,000 pounds in Area 2C and approximately 2 Mlb in Area 3A under 2006 conditions. The analysis does not have the data required to make more precise estimates at this time.

The leasing allowance would also provide a place for the common pool to go if it ran into the situation described above where held QS was not enough to cover the charter sector's expected catch for a given year. The common pool manager could engage in several short-term leases as a lower cost mechanism of avoiding in-season management restrictions caused by the potential short fall.

The second allowance states that "Commercial fishermen who hold QS and a sport fishing guide business license and/or a halibut moratorium license may convert all or a portion of their commercial QS to GAF on a yearly basis if they own and fish it themselves on their own vessel. Commercial and charter fishing may not be conducted from the same vessel during the same day." This option would allow operators who participate in both fleets to help provide QS to the common pool. This option may be particularly important given the potential magnitude of the QS shortfall. At the current time the analysis lacks the data necessary to quantify the total amount of QS held by commercial fishermen who fall into this category.

Expected Effects of Option 2: Individual Management

Option 2 of Action 2, Alternative 2 creates a system where individual charter operators would purchase the QS units from commercial QS holders and convert these shares into guided angler fish (GAF). A

regulatory amendment to the Halibut IFQ program would be needed to give charter operators the ability to hold QS. The authors note that unless the charter industry's initial allocation is allocated to individual charter operators, this option results in a system where the industry's initial allocation is held in common and then once that allocation is used during a season, operators switch over to fishing with their individual QS. In both a hybrid system and a common pool system charter operators would race for fish within the common pool. In the hybrid system, this race would result in some operators having an incentive to deplete the pool as quickly as possible to eliminate the competition from operators who do not have the resources to purchase QS. *If this option is not meant to be a hybrid system, then a crucial step of this option is the division of the charter sector's initial allocation between individual charter operators.* A charter operator can only determine how many QS units they need to buy if they know the difference between how many fish they will need in order to operate their business and how many fish they already have the right to harvest.

Element 1.1 Method of Funding

Under this option, eligible individuals would purchase commercial halibut QS/IFQ for use in the charter halibut fishery. As discussed in Section 2.6, this option would require the promulgation of new regulations under the Northern Pacific Halibut Act. Without regard to the overarching issue of individual charter operators' initial allocations, this option is the simplest method of re-allocation, as the QS purchases are just between two individuals—a seller and a buyer—at the current market price. This option leaves decisions to individuals in the marketplace and does not require public funding or any substantial increase in bureaucracy. Each individual charter operator is allowed to develop his/her own business plan independently of other charter operators. Providing each charter operator an opportunity to optimize the size of their particular allocation by purchasing or selling QS may be the most efficient method of allocating QS between the commercial and charter sectors. By providing individual charter operators the ability to assure themselves of sufficient fish to meet the needs of their clients, an individual allocation scheme would help avoid the shortages (or surpluses) of fish that may occur under a common pool arrangement.

Loans are likely to be an important source of the initial capital required to purchase QS. A loan would have to originate from a federal, state, or private source. As noted above, programs such as the North Pacific Federal Loan and CFRLF would require legislative changes to make charter operators eligible for the program. Another important source of financing is personal, private funding.[13] Personal resources were the most widely used method to finance commercial halibut QS transferred in "priced sales" transactions in 1995-1998. In Areas 2C, 3A, 3B, 4A and 4B, personal resources were reported as a source of financing far more often than the next most significant financing source. In all of these areas, personal financing was mentioned in connection with over 60% of the QS transferred. Personal resources were also the most important financing sources in Areas 4C and 4D, although by smaller margins than in other areas (Dinneford et al. 1999).

Element 1.2 Revenue Stream

Under an individual management regime, the revenue stream for paying back any debt financing of QS purchases will come from the individual operators business. As noted in Section 2.5.2 the revenue stream required to repay debt will depend on factors such as the size of the debt, the interest rate, and the repayment period. The size of the debt will depend on how much QS individual operators will need to purchase. This amount will depend on the characteristics of the individual operator's business and how

[13] We note that this method of funding could be used by an eligible individual, corporation, partnership, or other entity (including a non-profit corporation modeled after a Regional Aquaculture Association or Regional Seafood Development Association; for example, association members could pool their cash resources).

the aggregate sector's non-compensable allocation (i.e., the amount of allocated halibut harvest the charter sector does not have to pay the value of to the charter sector) is divided between qualifying moratorium permit holders. If the non-compensable allocation is equal to the current GHL and this allocation is split equally amongst moratorium permit holders, then the "average" individual operator would need to charge a per client per day fee on charter operators of between $10 and $20 in Areas 2C and 3A. If these charges were passed on to the client they would raise the direct charter fee by between 5% and 15% given the current price range for charters. Any increase in charges may affect demand. However, anglers may also realize that such a fee is the only way they can guarantee continued access to the fishery to which they have become accustomed.

Operators could also choose to charge clients on a "per fish" basis or on a "pounds harvested" basis. Individual operators will likely compete and offer different rate structures that attract different clients. For example, an angler interested in harvesting the largest fish may prefer a fee that is embedded in the overall price of a trip. At the same time, an angler interested in catch and release fishing may prefer an operator who charges a surcharge based on "pounds harvested." Operators will likely experiment over the initial seasons to see what rate structure works best.

Element 2.1 Limits on Transferability

Element 2.1 limits the amount of halibut quota that can be transferred between the commercial and charter fleets based on the combined commercial and charter catch limit. The limits on transferability create a minimum and maximum size to the harvest which could be used by either sector. However, given the long-term growth in the charter industry, the likely net effect of this provision would be to create a cap on the maximum size of the charter fleet and their associated harvests while creating a floor under the percentage of total harvest that the commercial fleet could access. The element defines the percentage of the combined commercial and charter catch limit that would be available for transfer between the sectors at: Option 1) 10%; Option 2) 15%; Option 3) 20%; or Option 4) 25%. The analysis does not predict different growth rates for the charter fishery under an individual management regime and a common pool management regime. Thus, the analysis estimates of when the various suboptions would begin to limit charter harvest do not vary between the common pool and individual management regimes. However, there are several important functional differences in how charter operators may behave under these two regimes. These issues are discussed in Section 2.6

Element 2.2 Limits on Purchase

Element 2.2 states that "Individuals are subject to the current use cap and block restrictions associated with commercial quota share." Current use cap rules allow QS holders in Areas 2C and 3A to hold up to 1% of the combined total number of QS units in Areas 2C, 3A, and 3B of which total 2C holdings can amount to no more than 0.5% of the total QS units in Area 2C. An operator that owns the maximum number of QS within 2C (1%) could not purchase additional shares for fishing in Area 2C. However, the operator could purchase additional QS in Area 3A under the 0.5% cap rule for Areas 3A and/or 3B. If these holding caps were applied to individual charter operators, it would establish an upper limit for non-leased control of QS. In Area 2C a charter operator could have controlled up to 5,642 halibut, while an Area 3A charter operator would have been able to control up to 10,662 halibut.

Element 2.3 Limits on Leasing

Element 2.3 contains limits on leasing for individual charter operators and individual commercial fishermen. The sub-sections below describe the analyzed limits for each sector.

Individual Charter Operators

The motion contains three options for limiting the leasing of QS by individual charter operators. The options would allow limited leasing with individuals allowed to control a combined amount of leased and held fish subject to an overall cap. Options 1 and 2 are mutually exclusive, but neither is mutually exclusive with Option 3. The options are:

- Option 1. An individual may not hold or control more than the amount equal to the current setline use cap converted to the number of fish in each area (currently 1% of the setline catch limit in 2C or 0.5% in 3A)
- Option 2. An individual may not hold or control more than 2,000, 5,000, or 10,000 fish.
- Option 3. Charter operators may lease up to 10% of their QS back to commercial sector

Both Option 1 and Option 2 would place a limit on the number of GAF that an individual charter operator could hold or control. In order to help quantify the effects of these limits, the analysis requested that ADF&G determine the number of businesses that would have qualified for moratorium permits based on NPFMC (2007a). There were a total of 369 qualifying permits in Area 2C and 466 qualifying permits in Area 3A. More than 95% of the businesses in both areas harvested less than 2,000 halibut in 2006.

Table 15 Distribution of Moratorium Permits by Number of Halibut Harvested in 2006

2006 Halibut Harvested	Area 2C Qualifying Permits		Area 3A Qualifying Permits	
	N	*%*	N	%
0-1,999	363	98.4	444	95.3
2,000-4,999	5	1.4	17	3.7
5,000-9,999	0	0.0	3	0.6
>= 10,000	1	0.2	2	0.4
Total	369	100.0	466	100.0

Source: ADF&G, 2007.

Option 1 limits permit holders to no more than the amount equal to the current setline use cap converted to the number of fish in each area (currently 1% of the setline catch limit in 2C or 0.5% in 3A). This limit in 2006 was equal to 5,642 halibut in Area 2C and 10,662 halibut in Area 3A. In Area 2C this limit would affect one estimated permit holder which harvested more than 10,000 halibut.[14] The remaining 368 estimated permit holders harvested less than 5,000 halibut. This option would not affect any businesses in Area 3A as all 466 estimated permit holders harvested less than 10,000 halibut.

Option 2 contains three suboptions which limit permit holders to no more than 2,000, 5,000, or 10,000 fish. The effects of these suboptions are:

- The 2,000 fish limit would affect 1.6% of estimated permit holders in Area 2C and approximately 4.7% of estimated permit holder in Area 3A. The analysis notes that this option conflicts directly with the Option in Element 2.2 which would allow 5,642 halibut in Area 2C and 10,662 halibut in Area 3A. The authors note that such a low limit would prevent industry consolidation. While consolidation has some negative effects when the number of players becomes too small, consolidation can also allow an industry to become more efficient resulting in higher consumer and producer surplus. The 2,000 fish limit may also effectively limit future charter industry growth as a high portion of the estimated permit holders currently operating below the limit are

[14] The Council has the ability to grandfather entities and exempt them from specific new action going forward. Hence, the Council could approve a 10,000 or 5,000 fish limit and grandfather existing businesses that harvest above those levels.

operating very near the limit. For example, if a large number of the permit holders are harvesting 1,900 fish annually, then their ability to grow is quite limited. While not available for this analysis, ADF&G should be able help quantify the potential for this effect by calculating the median and average number of fish harvested for permit holders below the 2,000 fish limit.

- The 5,000 fish limit would affect just one estimated permit holder in Area 2C and five estimated permit holders (i.e., 1% of the total) in Area 3A. The analysis notes that this option conflicts directly with the Option in Element 2.2 which would allow 5,642 halibut in Area 2C and 10,662 halibut in Area 3A. As vast majority of the estimated permit holders in both areas harvest less than 5,000 halibut annually, this suboption would not have the same "anti-consolidation" or anti-growth effects as the 2,000 fish limit.
- The 10,000 fish limit would affect one estimated permit holder in Area 2C. This option would not affect any businesses in Area 3A as all 466 estimated permit holders harvested less than 10,000 halibut. The analysis notes that this option conflicts directly with the Option in Element 2.2 for Area 3A as that option would allow permit holders to "own" QS equal to 10,662 halibut in Area 3A. As most of the estimated permit holders in both areas harvest less than 2,000 halibut annually, this suboption would not have the same "anti-consolidation" or anti-growth effects as the 2,000 fish limit.

Option 3 is not mutually exclusive with Option 1 or Option 2. This option would allow charter operators owning QS to lease up to 10% of their QS back to the commercial sector. This option effectively limits the incentive for individual charter operators to hold more QS than they can reasonably use while at the same time allowing them to lease some QS back to the commercial sector when the value of QS is higher when used for commercial purposes or when the charter operator is unable to harvest all of the QS they own during the charter season. An economic concern of this limitation is that if charter demand drops for a year or two because of an economic recession, charter operators might be forced to sell their QS as opposed to using their QS to create a short-term revenue stream to ride out the economic downturn.

Individual Commercial Fishermen

As with the common pool, Item B in Element 2.3 contains two leasing allowances for commercial fishermen. These allowances would allow commercial fishermen to engage in limited leasing and could help the charter sector as it transitions to an individual management regime. The options are:

- Option 1. Commercial fishermen who do not hold a sport fishing guide business license and/or moratorium permit may lease up to 10% of their annual IFQs for use as GAF on an individual basis, or to a common pool.
- Option 2. Commercial fishermen who hold QS and a sport fishing guide business license and/or a halibut moratorium license may convert all or a portion of their commercial QS to GAF on a yearly basis if they own and fish it themselves on their own vessel. Commercial and charter fishing may not be conducted from the same vessel during the same day.

The first allowance applies to those who do not hold a sport fishing guide business license and/or moratorium permit. This allowance would permit this fishermen lease up to 10% of their annual IFQs for use as GAF on an individual basis, or to a common pool. This allowance could provide the market with important liquidity during the formative years of a mechanism allowing QS exchanges between sectors. A primary concern of commercial fishermen has been the potential for market distortions if the common pool enters the market and attempts to purchase all of the QS needed by the charter sector in a short time period. Options 1 and 2 of Element 2.2 may limit the amount the common pool may purchase and, as noted in that section, these limitations may restrict the amount the common pool could purchase in the

first year of operation to less than what is needed by the charter sector during that first year. The leasing allowance described above could provide more than 500,000 pounds in Area 2C and approximately 2 Mlb in Area 3A under 2006 conditions. The analysis does not have the data required to make more precise estimates at this time.

The leasing allowance would also provide a place for the common pool to go if it ran into the situation described above where held QS was not enough to cover the charter sector's expected catch for a given year. The common pool manager could engage in several short-term leases as a lower cost mechanism of avoiding in-season management restrictions caused by the potential short fall.

The second allowances states that:

> *Commercial fishermen who hold QS and a sport fishing guide business license and/or a halibut moratorium license may convert all or a portion of their commercial QS to GAF on a yearly basis if they own and fish it themselves on their own vessel. Commercial and charter fishing may not be conducted from the same vessel during the same day.*

At the current time, the analysis lacks the data necessary to quantify the total amount of QS held by commercial fishermen who fall into this category.

Overarching Issues

This analysis revealed a number of overarching issues that could directly affect the efficacy and feasibility of a preferred alternative. These issues are discussed in the following subsections.

Common Pool Management vs. Individual Private Management

There are important differences between common pool management and individual private management in terms of incentivizing charter operators to control their harvest levels as the common pool does not automatically link the cost of each additional fish harvested with the benefits individual operators receive when their client harvest additional fish. Thus, it is in the best interests of each individual operator to charter as many client days as possible; a trend which will result in increasing harvest levels. The cost of increasing harvest levels is picked up by other members of the common pool unless the pool has a per fish or per client fee in place high enough to accurately reflect the cost of purchasing more QS. In the absence of these fees, or in the presence of a flat fee, the common pool system would have to rely on the threat of an in-season harvest management system to keep operators from harvesting too many halibut.[15] A fine system would be unlikely to work because it would be impossible to tell which operator was responsible for harvesting the marginal fish which pushes the common pool over its allocation. In comparison, individual private management would likely result in charter operators behaving like commercial operators in that they would need to balance the cost of purchasing or leasing additional QS with the revenues from taking additional passengers on charter trips.

A common pool and an individual allocation scheme are not mutually exclusive. A possibility within a limited entry program would be to allow a charter operator to hold QS while also fishing within the common pool. Proponents have argued that this system would allow operators to continue fishing in times of declining abundance where the common pool does not have a high enough allocation to meet charter angler demand. However, this scenario raises the perverse incentive where it is in the operator's best

[15] The authors note that charter operators could agree to divide QS amongst operators within the framework of the common pool. However, this arrangement would require a high degree of cooperation and self-enforcement.

interest to race to harvest the common pool allocation as quickly as possible. It replaces the current common pool problems with another common pool problem. Once the common pool allocation has been used up, the operator will face less competition as operators without QS will be unable to fish. ADF&G staff members have indicated that the state does not view these systems favorably given the incentives that they set up for charter operators to race within the common pool.

If the individual regime is not a hybrid system where there is a common pool with some individual management of QS, then the most likely form of the individual management system is some form of IFQ program. An IFQ program would mean that the initial allocation to the sector (i.e., the allocation for which the charter sector does not have to compensate the commercial sector) must be divided between moratorium permit holders. Prior experiences indicate that this division will most likely be a difficult process.

In-Season Management and Reporting

The authors conclude that some form of in-season management and advanced harvest tracking will be necessary under either a common pool management or individual private management. In-season management may be necessary within a common pool regime as there are no automatic incentives for individual charter operators to restrict their growth within a common pool regime. As each charter operator will not have an individual allocation, the most profitable business model is to expand the number of client days, which will then expand harvest. There is no direct link between harvesting an extra fish and the cost of that fish to the common pool. In comparison, individual private management provides a direct link between harvesting an extra fish and the cost of that fish to the individual operator as long as the operator reasonably expects that their harvest could be audited at any time. Individual private management will require an advanced level of reporting and tracking similar to what the commercial industry currently faces in order for operators to consider an audit a realistic threat.

The Alaska Department of Fish and Game Division of Sport Fish revised the saltwater charter and freshwater guide logbook program's reporting requirements in 2006. Both logbooks need to be submitted to ADF&G weekly. Information required of guides in the logbooks is the license number, client residency, as well as catch and harvest information for all clients. Submitting weekly reports will enable ADF&G to edit and enter data in a more timely fashion. The individual angler information will allow for verification of logbook information though angler surveys. These changes are intended to improve the timeliness, quality, and accuracy of the logbook information.

Halibut reporting in the saltwater logbook was re-instituted starting in 2006. The weekly reporting of all halibut client's harvest is expected to provide adequate information to restrict harvest when the charter sector allocation is projected to be reached. This is an important issue, because if the logbooks are not considered a sufficient source of data to restrict halibut charter harvests in-season, a new reporting requirement would need to be developed or the charter allocation could not be implemented as a true cap on charter harvests.

Transition and Timing Issues

A focus of commercial operator public testimony and Stakeholder Committee comments has been the issue of willing buyer and willing seller. In general, the commercial sector opposes any pro rata reduction and is more supportive of options that focus on transactions between willing buyers and willing sellers. This analysis shows that the number of QS that would have to willingly change hands will likely be a significant portion of the average yearly trading volume seen between 2001 and 2006. The longer it takes to initiate a compensated reallocation program the greater the charter sector's needs relative to the QS markets average annual trading volumes. Table 16 shows the charter sector's projected QS needs as a

percentage of the annual 2001-2005 trading volumes. This table assumes initial allocations equal to the current GHLs. The table shows that transition issues will likely increase as time passes.

Table 16 Charter Fleet QS Estimated Needs as Percentage of the 2001-2005 Trading Volume, by Area

	Area 2C		Area 3A	
Year	Low Average Growth	High Average Growth	Low Average Growth	High Average Growth
2007	27.7%	60.3%	0.0%	2.8%
2008	3.7%	38.7%	5.9%	13.7%
2009	18.1%	67.6%	13.0%	25.2%
2010	33.6%	99.9%	20.2%	37.1%
2011	50.1%	136.0%	27.7%	49.7%
2012	67.7%	176.2%	35.4%	62.8%
2013	86.5%	221.2%	43.4%	76.5%
2014	106.6%	271.4%	51.5%	90.9%
2015	128.1%	327.5%	60.0%	106.0%

Source: NEI Estimates 2007

This situation raises a number of important questions:

- What is the price that will entice enough willing sellers to sell enough QS to fully supply the needs of the charter fleet?
- Will the fleet be willing to pay this price and how will the common pool determine when the price is too high to be economically feasible?
- What happens if the commercial industry does not offer enough QS to the charter sector?
- Is it feasible to have a "phased approach" that spreads buying over a number of years?
- Can short-term leasing from the commercial sector fill the void?

A proposed solution to this issue has been the idea of a compensated pro rata reduction of either QS or the commercial TAC. This approach would not have all of the benefits of a market solution of willing buyers and sellers, but would eliminate the risk that the two sides could not come to a market solution which allows the charter industry to access the halibut resource at a level the public currently demands or may demand in the future. The pro rata reduction would also not require legislative changes, but it would raise the risk that some commercial fishermen operating on the margins would experience a reduction in QS or IFQ that forces them to change their business model, purchase more QS, or go out of business.

A Pro Rata Reduction

The suite of alternatives contains a series of "implementation issues" associated with the compensated reallocation. Some of these items are actual issues that need to be addressed while others reflect the intentions of the Stakeholder Committee as to how the compensated reallocation mechanisms would work. The most important of these implementation issues is Issue 7; the pro rata reduction. Pro rata reduction is based on the fact that QS/IFQ are not absolute rights or interests subject to the "takings"

provision of the Fifth Amendment (50 C.F.R. § 679.40(f)).[16] The Magnuson-Stevens Act provides authority to revoke, limit or modify limited access privileges, such as QS or IFQ, without compensation.

The discussion on the pro rata reduction concludes:

- A compensated reallocation program between willing buyers and sellers would be preferable to the commercial sector. The program could be structured so that an entity could hold the purchased QS for the sector and all charter operators could fish from that pool. However, the projected growth of the charter sector is expected to be greater than the amount of QS being transferred on the market. Therefore the charter sector may not be able to access sufficient QS to cover its client demand for trips (assuming a fixed harvest of halibut per client).
- A market-based system of allocation would allow halibut to flow to the charter sector if they value it most.
- NOAA GC has indicated there are no legal impediments to implementing a pro rata reduction. There are no takings issues surrounding reducing the amount of halibut that is derived from holding a unit of QS.
- The pro rata reduction could ensure the charter sector has a sufficient amount of halibut to meet client demand. However, the amount of compensation that would be paid for the fish is critical to the program gaining any acceptance from the commercial sector. Currently the commercial sector views this program as unacceptable.
- **Determining the appropriate level of compensation under the pro rata reduction will be difficult. The data are not currently available to determine compensation at an individual level. Estimates of arms-length class A lease values adjusted by the ratio of QS transfer values from other QS classes to the class A price may provide the best starting point for annual compensation payments.**
- **A formal system to formulate the final compensation price that both the commercial and charter sectors can accept for setting a "fair value" for each pound of halibut being reallocated must be developed. Whether the system is formula based, negotiated, or set through an arbitrator, both sides will need some level of trust in the process or the result will not be accepted by one or both sides.**
- Exempting category D QS holders from the willing buyer/seller compensated reallocation program will increase the cost of halibut to the charter sector, while allowing entry level commercial fishermen to buy into the IFQ program at a cost that is less than buying other categories of QS.
- Exempting category D QS holders from the pro rata compensated reallocation will increase the amount of halibut that other QS holders will have to forgo harvesting by 17.75% in Area 2C and 7.37% in Area 3A.

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[16] Sec. 303A(b) of the MSA states that a limited access privilege, quota share, or other limited access system authorization established, implemented, or managed under this Act—

(1) shall be considered a permit for the purposes of sections 307, 308, and 309;

(2) may be revoked, limited, or modified at any time in accordance with this Act, including revocation if the system is found to have jeopardized the sustainability of the stock or the safety of fishermen;

(3) shall not confer any right of compensation to the holder of such limited access privilege, quota share, or other such limited access system authorization if it is revoked, limited, or modified;

(4) shall not create, or be construed to create, any right, title, or interest in or to any fish before the fish is harvested by the holder; and

(5) shall be considered a grant of permission to the holder of the limited access privilege or quota share to engage in activities permitted by such limited access privilege or quota share.

1.0 ENVIRONMENTAL ASSESSMENT

This Environmental Assessment (EA) assesses the potential biological, social, and economic impacts of implementing regulations for two proposed actions. Action 1 would set an initial sector allocation between the charter and commercial IFQ halibut fisheries in International Pacific Halibut Commission (IPHC) Regulatory Areas 2C and 3A. Action 2 would allow the charter sector to compensate the commercial IFQ halibut sector for future increases in its allocation.

The National Environmental Policy Act (NEPA) requires that the following topics be addressed.

- Section 1.1 addresses the purpose and need of the proposed actions.
- Section 1.3 describes the alternatives considered for analysis.
- Section 1.6 describes the affected environment.
- Section 1.7 discusses the potential environmental impacts of the alternatives, as well as impacts on endangered species and marine mammals.
- Section 1.9 addresses cumulative impacts of the proposed actions.

Management of the Pacific halibut *Hippoglossus stenolepis* fishery in and off Alaska is based on an international agreement between Canada and the United States. This agreement, titled the "Convention Between the United States of America and Canada for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea" (Convention), was signed at Ottawa, Canada on March 2, 1953, and was amended by the "Protocol Amending the Convention," signed at Washington, D.C., March 29, 1979. The Convention is implemented in the United States by the Northern Pacific Halibut Act of 1982 (Halibut Act). The International Pacific Halibut Commission (IPHC) promulgates annual regulations that are approved by the Secretary of State under Section 4 of the Northern Pacific Halibut Act (Halibut Act, 16.U.S.C. 773–773k). Pursuant to regulations at 50 CFR 300.62, the approved IPHC regulations are published in the *Federal Register*. The Halibut Act also authorizes the Council to develop halibut fishery regulations in and off Alaska that are in addition to, but not in conflict with, the approved IPHC regulations (Halibut Act, Section 773(c)). Regulations developed by the Council will be implemented only upon approval of the U.S. Secretary of Commerce (Secretary).

Additional regulations that are not in conflict with those adopted by the IPHC are implemented by the Secretary of Commerce and may be developed by the Council to allocate harvest privileges among U.S. fishermen. The halibut fisheries in waters off Alaska (0-200 miles) is under the jurisdiction of the Secretary of Commerce, represented by the National Marine Fisheries Service (NMFS), and advised by the North Pacific Fishery Management Council (Council) These waters comprise IPHC Regulatory Areas 2C (Southeast Alaska), 3 (Southcentral Alaska), and 4 (Bering Sea/Aleutian Islands). The action area for this analysis is Area 2C and Area 3A in the Gulf of Alaska (Figure 1).

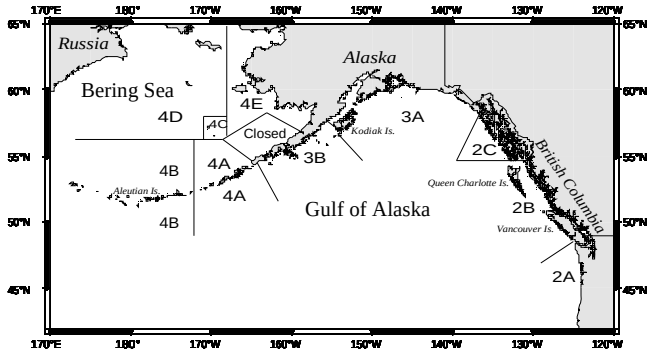

Figure 1 IPHC regulatory areas in the northern Pacific Ocean and Bering Sea

1.1 Purpose and Need

The purpose of the proposed actions is to: (1) set an initial allocation (i.e., a hard cap), and (2) design a program to compensate the commercial IFQ sector for any future reallocations above the initial allocation (under the first action). Along with restrictive harvest measures that were considered by the Council separately because the GHL has been exceeded each year since its implementation, the proposed sector allocations are intended to stop the *de facto* reallocation from the commercial IFQ sector to the charter sector in each area. Over the past 11 years, charter halibut harvests have grown at an annualized growth rate of 6.8% in Area 2C and 4.1% in Area 3A. Charter pressure is at its highest level in the recorded data period of 1998 through 2006. The number of clients per trip has increased steadily in recent years. This is one of the best measures of upward pressure on demand and its increase indicates that the number of clients is rising faster than the number of trips.

1.2 Problem Statement

The Council is concerned about its ability to maintain the stability, economic viability, and diversity of the halibut industry, the quality of the recreational experience, the access of subsistence users, and the socioeconomic well-being of the coastal communities dependent on the halibut resource. Specifically, the Council noted the following areas of concern with respect to the recent growth of halibut charter operations.

Problem Statement
June 2007

The absence of a hard allocation between the commercial longline and charter halibut sectors has resulted in conflicts between sectors and tensions in coastal communities that are dependent on the halibut resource. Unless a mechanism for transfer between sectors is established, the existing environment of instability and conflict will continue. The Council seeks to address this instability while balancing the needs of all who depend on the halibut resource for food, sport, or livelihood.

- Pressure by charter operations may be contributing to localized depletion in several areas.
- The recent growth of charter operations may be contributing to overcrowding of productive grounds and declining harvests for historic sport and subsistence fishermen in some areas.
- As there is currently no limit on the annual harvest of halibut by charter operations, an open-ended reallocation from the commercial IFQ sector to the charter industry is occurring. This reallocation may increase if the projected growth of the charter industry occurs. The economic and social impact on the commercial IFQ fleet of this open-ended reallocation may be substantial and could be magnified by the IFQ program.
- In some areas, community stability may be affected as traditional sport, subsistence, and commercial IFQ fishermen are displaced by charter operators. The uncertainty associated with the present situation and the conflicts that are occurring between the various user groups may also be impacting community stability.
- Information is lacking on the socioeconomic composition of the current charter industry. Information is needed that tracks: (a) the effort and harvest of individual charter operations; and (b) changes in business patterns.
- The need for reliable harvest data will increase as the magnitude of harvest expands in the charter sector.

1.3 Description of the Alternatives

The analysis contained in this document examined two potential changes to the prevailing management of the Pacific halibut charter fishing sector in Area 2C and Area 3A. Action 1 is independent of Action 2. Action 2 is dependent on the preferred alternative selected under Action 1. Whether the actions are implemented sequentially or simultaneously depend on the preferred alternatives selected by the Council.

Action 1 would set initial allocations of halibut harvests between the charter sector and commercial IFQ sector in Area 2C and Area 3A. In addition to the requisite No Action Alternative, the Council considered nine options under Alternative 2 for initial sector allocations in each area. These include six fixed percentage options and three fixed poundage options; the poundage options include suboptions to step the allocations up or down depending on halibut biomass.

In addition to the requisite No Action Alternative, Action 2, Alternative 2 contains two options to allow compensated reallocation shifts between the halibut commercial IFQ and charter sectors to occur. The options would allow the development of a common pool management system and/or the development of an individual private management system. Three suboptions examine potential common pool management systems: (1) Federal Common Pool; (2) State Common Pool; or (3) Regional Non-Profit Association Common Pool. Each common pool suboption would require Federal and/or State of Alaska legislation, plus a regulatory amendment to the commercial halibut individual fishing quota program. Legislative authorization places portions of the final program outside the Council process. The individual management option would require only a regulatory amendment. The analysis identified numerous overarching issues that are likely to affect the implementation of both types of systems. For simplicity, the analysis uses the status quo Guideline Harvest Levels (out of nine proposed alternatives under Action 1) as the baseline for comparison of the effects of four proposed alternatives under Action 2.

In June 2007 the Council adopted staff and committee recommendations for reorganizing the suite of alternatives under Action 2 for clarity. Staff further simplified the motion in an attempt to clarify the Council's options in this analysis. The Council's motion is under Appendix I for comparison. *Additional staff recommendations that are not already included in the reorganized alternative, but arose as a result of the analysis, are noted below.* [17]

Action 1. Initial Allocation

Alternative 1. No action.

Alternative 1 would continue management of the charter sector under the GHL program and annual harvest control measures.

[17] The suggested restructuring of Action 2, Alternative 2 continues the efforts that the Council initiated in June 2007 when it restructured the text of the April 2007 suite of alternatives. The effect of the staff recommendations is to streamline the analysis. No effective combination of elements, options, and suboptions was dropped. The Council may wish to consider further streamlining by moving some options that are not viable into a rejected alternative section. This will enhance the analysis of the crossover effects between the two actions. Currently, Action 2 uses the Action 1, No Action alternative as the baseline. The Council could select a preliminary preferred alternative(s) for the purpose of the crossover analysis. Using all nine Action 1 options would make the analysis unwieldy.

Alternative 2. Establish an allocation to the halibut charter sector that includes sector accountability.

Alternative 2 would set an allocation for the charter sector and guarantee a de facto allocation to the commercial IFQ sector.[18]

Option 1: Fixed percentage of combined charter harvest and commercial IFQ catch limit for reference period

		Area 2C	Area 3A
g.	125% of the 1995-1999 avg charter harvest (current GHL formula)	13%	14%
h.	125% of the 2000-2004 avg charter harvest (GHL formula updated thru 2004)	16%	15%
i.	125% of the 2001-2005 avg charter harvest (GHL formula updated thru 2005)	17%	15%
j.	current GHL as percent of 2004	12%	13%
k.	2004 charter harvest	14%	13%
l.	2005 charter harvest	15%	13%

Option 2: Fixed pounds

		Area 2C	Area 3A
d.	125% of the 1995-1999 avg charter harvest (current GHL)	1.4 Mlb	3.7 Mlb
e.	125% of the 2000-2004 avg charter harvest (GHL updated thru 2004)	1.7 Mlb	4.0 Mlb
f.	125% of the 2001-2005 avg charter harvest (GHL updated thru 2005)	1.9 Mlb	4.1 Mlb

Option i: Stair step down. The allocation in each area would be reduced in stepwise increments based on a decrease in the CEY. If the halibut stock were to decrease from 15% to 24% from its average CEY for the selected base period, then the allocation would be decreased by 15%. If the stock were to decrease from at least 25% to 34%, then the allocation would be decreased by an additional 10%. If the stock declined by at least 10% increments, the allocation would be decreased by an additional 10%.

Option ii: Stair step up. The allocation in each area would be increased in stepwise increments based on an increase in the CEY. If the halibut stock were to increase from 15% to 24% from its average CEY for the selected base period, then the allocation would be increased by 15%. If the stock were to increase from at least 25% to 34%, then the allocation would be increased by an additional 10%. If the stock increased by at least 10% increments, the allocation would be increased by an additional 10%.

Action 2. Compensated Reallocation between Commercial IFQ and Charter Sectors in Areas 2C and 3A

Alternative 1. No Action.

Alternative 2. Implement measures to allow compensated reallocation between the commercial IFQ sector and the charter sector. [Staff recommends replacing the italicized text of Alternative 2 with a revised Alternative 2 and 3, which follows]

Element 1: Holder of Quota Share, Method of Funding and Revenue Stream

Element 1.1: Federal – common pool

A. Method of Funding

option 1. loan

option 2. buyout program

B. Revenue Stream

option 1. halibut charter stamp

option 2. moratorium permit fee

option 3. self-assessment fee

suboption 1. fee is based on number of clients

suboption 2. fee is based on number of fish

Element 1.2: State of Alaska – common pool

A. Method of Funding

option 1. loan

option 2. bonding

B. Revenue Stream

option 1. charter stamp

option 2. sportfishing license surcharge

option 3. business license fee/surcharge or limited entry permit holder

suboption 1. fee is based on number of clients

suboption 2. fee is based on number of fish

Element 1.3: Regional private non-profit associations – common pool

A. Method of Funding

option 1. loan

B. Revenue Stream

option 1. self-assessment

Suboption 1. fee is based on number of clients

Suboption 2. fee is based on number of fish

Element 1.4: Individual - private (A moratorium permit would be required unless the moratorium is not in place, in which case a Guided Sportfish Business License would be required instead.)

A. Method of Funding

option 1. loan programs

option 2. private funding

Revenue streams will be for a defined period and end after the loan or bond is paid off, i.e., continuous open-ended revenue streams are to be avoided.

Element 2: Restrictions on transferability of commercial quota share by charter sector, with grandfather clause to exempt current participants in excess of proposed limits

Element 2.1: Limits on transferability
The percentages are based on the combined commercial IFQ and charter catch limit.

A percentage of the combined commercial IFQ and charter catch limit will be available for transfer between sectors.

Option 1: 10%
Option 2: 15%
Option 3: 20%
Option 4: 25%

Element 2.2: Limits on purchase

A. entities purchasing for a common pool:

Option 1. limited annually to a percentage (30%–50%) of the average amount of QS transferred during the previous five years.

Option 2. Restrictions on vessel class sizes/blocked and unblocked/ blocks above and below sweep-up levels to leave entry size blocks available for the commercial IFQ market and to leave some larger blocks available for an individual trying to increase their poundage. (These options are not intended to be mutually exclusive.)

B. individual: subject to the current ownership cap and block restrictions associated with commercial quota share

Element 2.3: Limits on leasing

A. Common Pool:

The common pool may only lease 0%–15% of holdings back to the commercial IFQ sector.

B. Individual charter operators:

Option 1. an individual may not hold or control more than the amount equal to the current setline ownership cap converted to the number of fish in each area (currently 1% of the setline catch limit in Area 2C or ½% in Area 3A)

Option 2. an individual may not hold or control more than 2,000, 5,000, or 10,000 fish. (Note: examine this as a percentage of the catch limit once allocations are established.)

Option 3. charter operators may lease up to 10% of their QS back to commercial IFQ sector

C. Individual commercial IFQ fishermen:

i. Commercial IFQ fishermen who do not hold a sport fishing guide business license and/or moratorium permit may lease up to 10% of their annual IFQs for use as GAF[19] on an individual basis, or to a common pool.

ii. Commercial IFQ fishermen who hold QS and a sport fishing guide business license and/or a halibut moratorium license may convert all or a portion of their commercial QS to GAF on a yearly basis if they own and fish it themselves on their own vessel.

[19] * GAF = Guided Angler Fish (This is used only as a charter unit of measurement for commercial quota share converted to charter use and is not indicative) of a particular long term solution.)
** indicates changes made by the AP to the Halibut Stakeholder recommendations

Commercial IFQ and charter fishing may not be conducted from the same vessel during the same day.

Element 3: Implementation Issues

1. *These qualifying entities may purchase commercial QS and request NMFS to issue annual IFQs generated by these shares as Guided Angler Fish (GAF*).*

2. *Qualified entities harvesting GAF while participating in the guided sport halibut fishery are exempt from landing and use restrictions associated with commercial IFQ fishery, but subject to the landing and use provisions detailed below.*

3. *GAF would be issued in numbers of fish. The conversion between annual IFQ and GAF would be based on average weight of halibut landed in each region's charter halibut fishery (2C or 3A) during the previous year as determined by ADF&G. The long-term plan may require further conversion to some other form (e.g., angler days).*

4. *Subleasing of GAF would be prohibited.*

5. *GAF holders may request NMFS convert unused GAF into IFQ pounds for harvest in compliance with commercial IFQ fishing regulations provided the GAF holder qualifies under the commercial IFQ regulations.*

6. *Unused GAF may revert back to pounds of IFQ at the end of the year and be subject to the underage provisions applicable to their underlying commercial QS.*

7. *All compensated reallocation would be voluntary based using willing seller and willing buyer.*
Option: A pro rata reduction with compensation. A pro rata reduction would not decrease the number of QS held by an individual; rather, it would decrease the size of the total commercial pool from which IFQs are annually calculated. The effect would be similar to how a decrease in abundance affects annual calculation of IFQs, except that quota share holders would be compensated for the resultant poundage reduction of their IFQs.
Option: Exempt category D QS from voluntary and involuntary pro rata reduction with compensation

8. *Guided angler fish derived from commercial QS may not be sold into commerce, i.e., all sport regulations remain in effect.*

9. *Guided angler fish derived from commercial QS may not be used to harvest fish in excess of the non-guided sport bag limit on any given day.*

10. *There needs to be a link between the charter business operators and the cost of increasing the charter pool. If the charter business operators do not experience the cost of increasing the charter pool, there will not be a feedback loop to balance the market system.*

Staff recommendation for Revised Alternatives 2 and 3.

Alternative 2. Common Pool Management for Compensated Reallocation.

Alternative 2 would allow the charter sector to compensate the commercial IFQ sector for future reallocations using a common pool management regime. Alternatives 2 and 3 may be selected in combination.

Element 1: Holder of Quota Share, Method of Funding and Revenue Stream

Element 1.1: Method of Funding

A. Federal Common Pool
- option 1. loan
- option 2. buyout program

D. State of Alaska Common Pool
- option 1. loan
- option 2. bonding

E. Regional Non-Profit Association Common Pool
- option 1. loan

Element 1.2: Revenue Stream

4. Federal Common Pool
   - option 1. halibut charter stamp
   - option 2. moratorium permit fee
   - option 3. self-assessment fee
     - suboption 1. fee is based on number of clients
     - suboption 2. fee is based on number of fish
5. State of Alaska Common Pool
   - option 1. charter stamp
   - option 2. sportfishing license surcharge
   - option 3. business license fee/surcharge or limited entry permit holder
     - suboption 1. fee is based on number of clients
     - suboption 2. fee is based on number of fish
6. Regional Non-Profit Association Common Pool
   - option 1. self-assessment
     - suboption 1. fee is based on number of clients
     - suboption 2. fee is based on number of fish

Revenue streams will be for a defined period and end after the loan or bond is paid off, i.e., continuous open-ended revenue streams are to be avoided.

Element 2: Restrictions on transferability of commercial quota share by charter sector, with grandfather clause to exempt current participants in excess of proposed limits

Element 2.1: Limits on transferability

The percentages are based on the combined commercial IFQ and charter catch limit. A percentage of the combined commercial IFQ and charter catch limit will be available for transfer between sectors.

Option 1: 10%
Option 2: 15%
Option 3: 20%
Option 4: 25%

Element 2.2: Limits on purchase

Entities purchasing for a common pool:

Option 1. limited annually to a percentage (30%–50%) of the average amount of QS transferred during the previous five years**.**

Option 2. Restrictions on vessel class sizes/blocked and unblocked/ blocks above and below sweep-up levels to leave entry size blocks available for the commercial IFQ market and to leave some larger blocks available for an individual trying to increase their poundage. (These options are not intended to be mutually exclusive.)

Element 2.3***:*** Limits on leasing - the common pool may only lease 0%–15% of holdings back to the commercial IFQ sector.

Alternative 3. Individual Management for Compensated Reallocation

Alternative 3would implement measures to allow the individual charter limited entry (moratorium) permit holders[20] to compensate the commercial IFQ sector for future reallocations. Alternatives 2 and 3 may be selected in combination.

Element 1: Holder of Quota Share, Method of Funding and Revenue Stream

Element 1.1: Method of Funding

option 1. loan programs

option 2. private funding

Element 1.2: Revenue Streams will come from private sources.

Element 2: Restrictions on transferability of commercial quota share by charter sector, with grandfather clause to exempt current participants in excess of proposed limits

Element 2.1: Limits on transferability

The percentages are based on the combined commercial IFQ and charter catch limit. A percentage of the combined commercial IFQ and charter catch limit will be available for transfer between sectors.

Option 1: 10%

Option 2: 15%

Option 3: 20%

Option 4: 25%

Element 2.2: Limits on purchase - Individuals are subject to the current ownership cap and block restrictions associated with commercial quota share

Element 2.3***:*** Limits on leasing

A. Individual charter operators:

Option 1. an individual may not hold or control more than the amount equal to the current setline ownership cap converted to the number of fish in each area (currently 1% of the setline catch limit in Area 2C or 0.5% in Area 3A)

Option 2. an individual may not hold or control more than 2,000, 5,000, or 10,000 fish. (Note: examine this as a percentage of the catch limit once allocations are established.)

Option 3. charter operators may lease up to 10% of their QS back to commercial IFQ sector

[20] ADF&G Guided Sportfish Business License if the limited entry program is not approved by the Secretary

B. Individual commercial IFQ fishermen:

i. Commercial IFQ fishermen who do not hold a sport fishing guide business license and/or moratorium permit may lease up to 10% of their annual IFQs for use as GAF[21] on an individual basis, or to a common pool.

ii. Commercial IFQ fishermen who hold QS and a sport fishing guide business license and/or a halibut moratorium license may convert all or a portion of their commercial QS to GAF on a yearly basis if they own and fish it themselves on their own vessel. Commercial IFQ and charter fishing may not be conducted from the same vessel during the same day.

Alternative 2 and 3 Implementation Issues

1. *These qualifying entities may purchase commercial QS and request NMFS to issue annual IFQs generated by these shares as Guided Angler Fish (GAF*).* ***Affects the Private Pool Only.***

2. *Qualified entities harvesting GAF while participating in the guided sport halibut fishery are exempt from landing and use restrictions associated with commercial IFQ fishery, but subject to the landing and use provisions detailed below.* ***Affects both the Private Pool and Common Pool.***

3. *GAF would be issued in numbers of fish. The conversion between annual IFQ and GAF would be based on average weight of halibut landed in each region's charter halibut fishery (2C or 3A) during the previous year as determined by ADF&G. The long-term plan may require further conversion to some other form (e.g., angler days).* ***Affects both the Private Pool and Common Pool.***

4. *Subleasing of GAF would be prohibited.* ***Affects the Private Pool Only.***

5. *GAF holders may request NMFS convert unused GAF into IFQ pounds for harvest in compliance with commercial IFQ fishing regulations provided the GAF holder qualifies under the commercial IFQ regulations.* ***Affects the Private Pool Only.***

6. *Unused GAF may revert back to pounds of IFQ at the end of the year and be subject to the underage provisions applicable to their underlying commercial QS.* ***Affects both the Private Pool and Common Pool.***

7. All compensated reallocation would be voluntary based using willing seller and willing buyer.

Option: A pro rata reduction with compensation. A pro rata reduction would not decrease the number of QS held by an individual; rather, it would decrease the size of the total commercial pool from which IFQs are annually calculated. The effect would be similar to how a decrease in abundance affects annual calculation of IFQs, except that quota share holders would be compensated for the resultant poundage reduction of their IFQs.

Option: Exempt category D QS from voluntary and involuntary pro rata reduction with compensation

Affects both the Private Pool and Common Pool.

8. *Guided angler fish derived from commercial QS may not be sold into commerce, i.e., all sport regulations remain in effect.* ***Affects both the Private Pool and Common Pool.***

9. *Guided angler fish derived from commercial QS may not be used to harvest fish in excess of the non-guided sport bag limit on any given day.* ***Affects both the Private Pool and Common Pool.***

[21] GAF = Guided Angler Fish (This is used only as a charter unit of measurement for commercial quota share converted to charter use and is not indicative) of a particular long term solution.)

** indicates changes made by the AP to the Halibut Stakeholder recommendations

10. *There needs to be a link between the charter business operators and the cost of increasing the charter pool. If the charter business operators do not experience the cost of increasing the charter pool, there will not be a feedback loop to balance the market system.* ***Affects both Common Pool Only.***

Staff recommends that the proposed Implementation Issues (except #7) be moved out of the alternatives and into the respective analytical sections of the analyses. As originally recommended by the Charter Halibut Stakeholder Committee, commercial halibut QS and/or IFQs transferred for use in the charter sector would be in the form (ONLY) of guided angler fish (or GAF). This presupposes that the Council will not pursue a future action for a share-based program using charter IFQs (instead of GAFs. If the Council has not identified GAFs as its only mechanism to administer the use of commercial QS/IFQs in the charter sector, then it should be moved into a new Element under both alternatives

Staff recommends that Issue 7 be identified as a "new" element to both Alternatives 2 and 3 and requests that the Council clarify whether the element addresses both QS and IFQ. This point is not explicitly stated in the language of the options, but it is implied in the language of the some of the implementation issues.

New Element 1.3. Source of commercial QS/IFQs* for compensation

Option 1. All compensated reallocation would be voluntary based on willing sellers and willing buyers.
Suboption: Exempt category D QS from the compensation program

Option 2. A pro rata reduction with compensation. A pro rata reduction would not decrease the number of QS held by an individual; rather, it would decrease the size of the total commercial pool from which IFQs are annually calculated. The effect would be similar to how a decrease in abundance affects annual calculation of IFQs, except that quota share holders would be compensated for the resultant poundage reduction of their IFQs.
Suboption: Exempt category D QS pro rata reduction with compensation

*the Council should clarify whether QS (permanent) and IFQs (annual) transfers are included in the compensation program

1.3.1 Action 1, Alternative 1

The Council has discussed the expansion of the charter halibut sector since 1993. In 1995, the Council adopted a problem statement, which recognized that the increasing amount of harvest by the charter sector may change the stability, economic viability, and diversity of the halibut industry, the quality of the recreational experience, access for subsistence users, and the socioeconomic well-being of the coastal communities dependent on the halibut resource in Areas 2C and 3A. This policy statement led to the development of guideline harvest levels (GHL), which were intended to address the allocative issues between the commercial IFQ and charter sectors.

In September 1997, the Council recommended that the Secretary implement two actions that directly affected the charter halibut sector: (1) recordkeeping and reporting requirements, which were subsequently implemented by ADF&G; and (2) GHLs for Areas 2C and 3A. After receiving advice from NMFS to include harvest control measures that would restrict harvests to the GHLs, the Council revised its preferred alternatives. The final rule implementing the GHLs was promulgated on August 8, 2003 [68 FR 47256]. It removed the "problematic" harvest control measures, which were determined to conflict with the legal requirements of the Administrative Procedures Act after the Council took final action. It established the GHLs as a level of acceptable annual harvests for the charter halibut sector in the two areas. The GHLs were set at 1.432 Mlb net weight in Area 2C and 3.65 Mlb net weight in Area 3A. The

GHL formula incorporated a 25% increase above past charter harvests. The charter sector requested that a fixed allocation be provided to enhance predictability for bookings for the next summer's fishing season. The overall intent was to maintain a stable charter fishing season of historic length, using area-specific measures to control harvests to the GHL. The GHLs have never been reduced.

While commercial IFQs fluctuate directly with halibut stock abundance, the fixed GHLs for Areas 2C and 3A are established annually in pounds and only respond to a decline in stock abundance. Regulations at 50 CFR 300.65 define GHLs in relation to halibut stock abundance (Total CEY). The GHLs are reduced if the area-specific total CEY declines by at least 15% below the average 1999-2000 total CEY, as determined by the IPHC. For example, if the total CEY in Area 2C were to fall to 7.965 Mlb (between 15% and 24% below its 1999-2000 average, as calculated when the regulations were drafted in 2003), then the GHL would be reduced to 1.217 Mlb or less. If the total CEY declined to 6.903 Mlb (by 25% to 34%), then the GHL would be reduced to 1.074 Mlb. If the total CEY continued to decline by at least another 10%, the GHL would be reduced by an additional 10% until it reached a baseline level of 931,000 lb. The GHL would be increased by commensurate incremental percentage points up to, but no greater than, its original level of 1.432 Mlb if halibut abundance rebounded. A separate set of thresholds is in regulations for Area 3A.

Since its implementation in 2004, the charter sector has exceeded the Area 2C and Area 3A GHLs by increasing amounts. Therefore, expanding charter sector harvests reduce the allocation to the commercial IFQ halibut sector, and the amount of commercial IFQs to commercial share holders. Post-season harvest projections by ADF&G for the 2006 charter fishing season indicate the GHL was exceeded by 47% (680,000 lb) and the Area 3A GHL was exceeded by at least 9% (318,000 lb) (Table 17). On August 31, 2007 ADF&G released final 2006 charter halibut harvest data for Area 3A of 3.664 M lb, which is only 0.37% over the Area 3A GHL of 3.650 M lb. The final estimate is about 284,000 lb lower than last year's projection of 2006 harvest. Last year's projection was high by 7.7%. The final estimates have not been incorporated into this draft because Area 3A data was released while this draft was being finalized and Area 2C data had not yet been released. **The public review draft will include the final estimates for 2006 for both areas.**

On June 1, 2007 the Secretary implemented a two-fish bag limit in Area 2C, with one of the two fish required to be 32 inches or less [72 FR 30714]. This action was deemed necessary to reduce the halibut harvest in the charter vessel sector to its GHL, while minimizing negative impacts on this sector, its sport fishing clients, and the coastal communities that serve as home ports for the sector. The Secretarial action resulted from a recommendation in January 2007 by the IPHC for a reduction in the bag limit for charter halibut sector from two fish to one fish between June 15 and July 30, 2007 in Area 2C and from June 15 - 30, 2007 in Area 3A. The IPHC action was a response to increasing harvests from the charter sector, which has experienced a substantial increase in capacity and catch during the last 10 years. The IPHC believed it needed to take action because alternatives then under consideration by the Council would not be in place prior to 2008. In March 2007 the Secretary of State in consultation with the Secretary of Commerce rejected the IPHC recommendation for a bag limit reduction in both areas. The Secretaries cited concerns about the potential economic impact to the charter sector and requested that NMFS examine alternatives to reduce charter halibut harvests to a level comparable to the IPHC action while minimizing the economic impacts on the charter sector.

In June 2007 the Council recommended that the Secretary take the following actions in Area 2C for 2008 and beyond: (1) retain the two-fish daily limit with one of those fish required to be 32 inches or less; (2) mirror a State of Alaska prohibition on halibut harvest by skipper and crew while clients are on board in Federal regulation; (3) mirror a State of Alaska line limit of six per vessel, not to exceed the number of paying clients on board, in Federal regulation; and (4) set an annual limit of four fish per angler. The preferred alternative also includes a different set of measures if the Area 2C GHL is reduced to 1.217

M lb in 2008, as a result of action taken by the International Pacific Halibut Commission to reduce the total catch equilibrium yield in Area 2C. These include: (1) one-fish bag limit for the entire season; (2) a prohibition on halibut harvest by skipper and crew while clients are on board; and (3) line limits of six per vessel, not to exceed the number of paying clients on board. The proposed rule will notify the public of the two paths that the final regulations could take.

Table 17 Area 2C (above) and Area 3A (below) sport catch of Pacific halibut. Values shown for 2006 are projections based on the ADF&G Statewide harvest survey and reflect the prohibition on skipper/crew fish in 2006. (net weight)

Area 2C Year	Guided Harvest (M lb)	Guided Harvest (percent of GHL)	Unguided Harvest (Mlb)	Total[c] (Mlb)
1995	0.986	67	0.765	1.751
1996	1.187	83	0.943	2.129
1997	1.034	72	1.139	2.172
1998	1.584	110	0.917	2.501
1999	0.938	66	0.904	1.843
2000	1.132	79	1.126	2.258
2001	1.202	84	0.723	1.925
2002	1.275	89	0.814	2.090
2003	1.412	99	0.846	2.258
2004[a]	1.750	122	1.187	2.937
2005	1.952	136	0.845	2.798
2006[b]	*2.028*	*142*	*1.004*	*3.032*
Area 3A Year	**Guided Harvest (Mlb)**	**Guided Harvest (percent of GHL)**	**Unguided Harvest (Mlb)**	**Total[c] (Mlb)**
1995	2.845	78	1.666	4.511
1996	2.822	77	1.918	4.740
1997	3.413	94	2.100	5.514
1998	2.985	82	1.717	4.702
1999	2.533	69	1.695	4.228
2000	3.140	86	2.165	5.305
2001	3.132	86	1.543	4.675
2002	2.724	75	1.478	4.202
2003	3.382	93	2.046	5.427
2004[a]	3.668	100	1.937	5.606
2005	3.689	101	1.984	5.672
2006 [b, d]	*3.947*	*108*	*2.141*	*6.088*

a First full charter season under the GHL harvest policy (final rule published August 3, 2003).

b Projection based on traditional linear regression method to estimate harvest based on historical trends in SWHS.

c Discrepancies in the total value are from rounding error.

d Estimate includes skipper and crew fish which accounted for approximately 0.0845 Mlb.

In October 2007 the Council will review a suite of alternatives to reduce charter halibut harvest to its Area 3A GHL of 3.65 Mlb. These measures include: (1) No more than one trip per charter vessel per day; (2) No harvest by skipper or crew and a limit on the number of lines to not exceed the number of paying clients; (3) Annual limits of four fish, five fish, or six fish per charter angler; (4) Reduced bag limits of one fish per day in May, June, July, August, September or for the entire season; (5) Requiring one of two fish in a daily bag to be larger than 45 inches or 50 inches; (6) Requiring one of two fish in a daily bag to measure less than, or equal to, 32 inches, 34 inches, or 36 inches; or (7) A reverse slot limit requiring one of two fish in a daily bag limit to measure 32 inches or less or longer than either 45 inches or 50 inches. If a preferred alternative is selected by the Council in December 2007 new regulations could be implemented as soon as June 2008.

In addition, the status quo includes State regulations. Emergency orders were issued by ADF&G to prohibit sport fishing guides and crew members on a charter vessel from retaining fish while clients are onboard the vessel during the fishing season in 2006 and 2007 for Area 2C and in 2007 for Area 3A. State regulations for Southeast Alaska also limit the number of lines in the water to the number of paying clients, with a maximum of six.

Prior to State actions in 2006 and Federal action in 2007 charter halibut harvests have been effectively unrestricted because the GHL is not a "hard" cap.[22] The commercial IFQ allocation is a hard cap that is calculated after deducting estimates of all other removals, including charter harvest. Extensive recordkeeping and reporting requirements under the commercial IFQ program ensure that the commercial IFQ catch limits are not exceeded by individuals or the sector.

Taking no action would continue management under GHLs in Areas 2C and 3A. It may require annual regulatory adjustments to optimally match charter halibut harvests to the respective GHLs. The Council has acknowledged the inefficiency of managing the charter sector under the GHLs by its initiation of this analysis and is considering a separate analysis of share-based allocation systems for a "permanent solution."

1.3.2 Action 1, Alternative 2

Alternative 2 proposes to implement an allocation between the charter sector and the commercial IFQ sector. Such a (hard) allocation implies taking in-season or pre-season measures to ensure that the charter allocation is not exceeded. The Council is considering several percentage and fixed poundage options for the charter sector allocation. They range between 12% and 17% and 1.4 Mlb and 1.9 Mlb for Area 2C and between 13% and 15% and 3.7 Mlb and 4.1 Mlb for Area 3A. All are based on formulas that reflect historical harvest. The fixed poundage options include potential allocation increases and/or decreases, depending on biomass thresholds. Those "stair-steps" make the fixed poundage options more akin to the percentage options.

1.3.3 Action 2, Alternative 1

Taking no action would set the initial allocation to the charter sector and not allow for any growth, unless otherwise increased by a Council recommendation in a future action. The need for Action 2 (in the short term) is dependent on the Council's preferred alternative under Action 1. An initial allocation equal to the GHL would require restrictive measures and possibly in-season closings or reductions because charter halibut harvests are exceeding the GHLs. An initial allocation that is greater than the GHL would allow charter halibut harvests to increase to that level, but may eventually require restrictive measures and in-season actions.

1.3.4 Action 2, Alternative 2

Alternative 2 would allow one or more types of entities to purchase commercial halibut quota shares (QS) or IFQs for use of a common pool of charter operators and allow that permanent quota share (QS) or annual individual fishing quota (IFQ) allocation to be used to increase the charter halibut allocation for the common pool. There are three options for what entity may be allowed to hold these QS or IFQs for use in the charter sector (Federal government, State government, or private non-profit organizations). There are three options for funding sources to purchase the QS or IFQs (stamp, moratorium permit fee, or a self-assessed fee). There are numerous proposed restrictions on these commercial IFQ transactions to

[22] The fishery is not closed when the GHL is reached.

uphold other goals of the commercial IFQ program. Common pool options may be selected in combination with a fourth option that would allow individuals who will be charter limited entry (moratorium) permit holders (upon Secretarial approval) to compensate the commercial IFQ sector for future reallocations so as to be exempt from restrictions implemented for the sector. Funding would be privately obtained. The individual option may be selected in combination with common pool options.

Staff requests that the Council clarify its intent for the process for how these individual exemptions will be determined, implemented, and enforced. Proposed restrictions on these commercial IFQ transfers would uphold other goals of the commercial IFQ program.

1.4 Relationship of this Action to Federal law

While NEPA and the Regulatory Flexibility Act (RFA) are the primary laws directing the preparation of this document, a variety of other Federal laws and policies require environmental, economic, and socio-economic analysis of proposed Federal actions. This document contains the required analysis of the proposed Federal action to ensure that the action complies with these additional Federal laws and executive orders:

- Convention between the United States and Canada for the Preservation of the halibut fishery of the North Pacific Ocean and Bering Sea (Convention). Northern Pacific Halibut Act (Halibut Act, 16 U.S.C. 773-773k)
- Endangered Species Act
- Marine Mammal Protection Act
- Administrative Procedure Act
- Information Quality Act

1.5 Related NEPA Documents

The NEPA documents listed below have detailed information on the halibut sector, groundfish fisheries with halibut bycatch, and on the natural resources, the economic and social activities, and communities affected by those fisheries:

- Groundfish Programmatic Supplemental Environmental Impact Statement (PSEIS by NMFS 2004)
- Essential Fish Habitat Environmental Impact Statement (EIS by NMFS 2005b)
- The Harvest Specifications Environmental Impact Statement (EIS by NMFS 2007)
- Guideline Harvest Level Environmental Assessment (EA by Council 2003)
- Regulatory amendment to implement measures to reduce charter harvest in Area 2C to the GHL (EA/RIR/IRFA by Council 2007b)
- Regulatory amendment to define subsistence halibut fishing in Convention Waters (EA/RIR/IRFA by Council 2003b)
- Regulatory amendment to modify the halibut bag limit in the halibut charter fisheries in IPHC Regulatory Area 2C (EA/RIR/IRFA by NMFS 2007)

1.6 Affected Environment

The NEPA documents listed below contain extensive information on the fishery management areas, marine resources, ecosystem, social and economic parameters of these fisheries, and the annual harvest specifications. Rather than duplicate an affected environment description here, readers are referred to those documents. All of these public documents are readily available in printed form or over the Internet

at links given in the references. Because this action is limited in area and scope, the description of the affected environment is incorporated by reference from the following documents:

Groundfish Programmatic EIS. The Alaska Groundfish Fisheries Final Programmatic Supplemental Environmental Impact Statement (PSEIS) evaluates the fishery management policies embedded in the GOA and BSAI groundfish FMPs against policy level alternatives and the setting of TACs, allowable biological catch (ABC), and overfishing level (OFL) at various levels (NMFS 2004). The PSEIS is available at http://www.fakr.noaa.gov/sustainablefisheries/default.htm. The following sections of this document are particularly relevant:

- Section 3.3 contains a description of the physical oceanographic environment for BSAI and GOA waters.
- Section 3.5.2 contains descriptions of prohibited species management, life history characteristics, trophic interactions, past and present effects analysis, comparative baseline and cumulative effects analysis.
- Section 3.5.3 contains descriptions of target groundfish species management, life history characteristics, trophic interactions, past and present effects analysis, comparative baseline and cumulative effects analysis.
- Section 3.9.2.4 contains socio-economic information on fishing sectors, including the hook and line sectors.

Harvest Specification EIS. The EIS analyzed the Council's harvest strategy for the GOA fisheries (NMFS 2007). The EIS included ecosystem considerations section of the Stock Assessment and Fishery Evaluation (SAFE) reports. The EIS also contains a detailed discussion of the prohibited species catch limits, which include a discussion on the management of halibut bycatch. http://www.fakr.noaa.gov/analyses/specs/eis/default.htm.

Essential Fish Habitat Identification and Conservation in Alaska EIS. (NMFS 2005b) This EIS reexamines the effects of fishing on EFH in waters off Alaska, presents a wider range of alternatives, and provides a thorough analysis of potential impacts on EFH caused by the groundfish fishery. The analysis provides a description of managed groundfish species, marine mammals, and the socioeconomic environment in the Central GOA trawl fishery. There are long-term effects of fishing on benthic habitat features off Alaska and acknowledges that considerable scientific uncertainty remains regarding the consequences of such habitat changes for the sustained productivity of managed species. The EIS is found at http://www.fakr.noaa.gov/habitat/seis/efheis.htm.

Steller Sea Lion Protection Measures Final Supplemental Environmental Impact Statement (SEIS). (NMFS 2001) The SEIS evaluates alternatives to mitigate potential adverse effects as a result of competition for fish between Steller sea lions under a no action alternative as well as other alternatives that would substantially reconfigure the GOA and BSAI groundfish fisheries. Impacts are disclosed, both significantly positive and significantly negative as required by NEPA. A biological opinion prepared according to the Endangered Species Act is included for the preferred alternative. This document also describes the life history characteristics of Steller sea lions and potential interactions with the groundfish fisheries. For more information see http://www.fakr.noaa.gov/sustainablefisheries/seis/sslpm/default.htm.

For those groundfish stocks where information is available, none are considered overfished or approaching an overfished condition and all are managed within the annual harvest specifications. The ABC, OFL, and TAC amounts for each target species or species group for 2006 is specified in the *Federal Register* (71 FR 10870, March 3, 2006). The status of each target species category, biomass estimates, and acceptable biological catch specifications are presented both in summary and in detail in the annual SAFE reports (Council 2005b). The SAFE report also updated the economic status of the

groundfish fisheries off Alaska and presented the ecosystem considerations relevant to the GOA. This EA incorporates by reference stock status information in the SAFE reports (Council 2005).

The IPHC annually publishes a summary of current management, research, and harvest recommendations for its annually meeting. This document may be found on the IPHC's website at http://www.iphc.washington.edu/halcom/default.htm.

1.7 Potential Environmental Impacts

The proposed actions to allocate the halibut resource between charter and commercial IFQ users in Area 2C and Area 3A is limited in scope and will not likely affect all environmental components within those areas. No effects are expected on the physical environment, benthic community, non-specified and forage species, marine mammals, and sea bird components of the environment because current fishing practices (e.g., season and gear types) harvest limits, or regulations protecting habitat and important breeding areas as described in previous NEPA documents (Section 3.0) would not be changed by any of the alternatives. No effects are expected for marine mammals because existing protection measures would not be changed, nor would allowable harvest amounts for important prey species. None of the alternatives would change groundfish TAC amounts, methods, season closure dates, or areas closed to fishing.

Table 18 shows the three potentially affected components: groundfish, halibut stocks, and the socioeconomic environment. The potential effects of the alternatives on the resource could be caused by increased harvest of groundfish species, incidental catch of groundfish species, and an increase in halibut mortality. These potential impacts on resource components are described in more detail in Section 1.8.

Negative impacts on non-halibut prohibited species, including salmon, are not expected because current ADF&G and Federal management closely monitors stock health, allocation, and restricts harvest from all sectors to biological management goals. The alternatives would not significantly change the amount of these species harvested, fishing methodology, areas fished, seasons fished, or fishing intensity. Salmon is the primary prohibited species other than halibut targeted in the sport sector. Information is not available to predict small changes in harvest patterns due to the alternatives, however, given the magnitude of the charter sector, angler preferences, specialized gear to target halibut, and current regulations to control sport harvest, any increase in salmon removals is likely to be small and would be regulated within biological limits.

No effects are expected on the physical environment, benthic community, non-specified and forage species, marine mammals, and sea bird components of the environment because current fishing practices (e.g., season and gear types) harvest limits, or regulations protecting habitat and important breeding areas as described in previous NEPA documents would not be changed by any of the alternatives. No effects are expected for marine mammals because existing protection measures would not be changed, nor would allowable harvest amounts for important prey species. None of the alternatives would change groundfish TAC amounts, methods, season closure dates, or areas closed to fishing.

The significance ratings are: significantly beneficial, significantly adverse, insignificant, and unknown. Where sufficient information on direct and indirect effects is available, rating criteria are quantitative in nature. In other instances, where less information is available, the discussions and rating criteria are qualitative. In instances where criteria to determine an aspect of significance (significant adverse, insignificant, or significant beneficial) do not logically exist, no criteria are noted.

Table 18 Resource components potentially affected by the proposed alternatives

	Potentially Affected Component								
Alternatives	**Non-halibut prohibited species**	**Physical**	**Benthic Comm.**	**Groundfish**	**Marine Mammals**	**Seabirds**	**Non-specified Species**	**Halibut**	**Socio-economic**
Action 1, Alternative 1	N	N	N	N	N	N	N	N	N
Action 1, Alternative 2	N	N	N	N	N	N	N	N	N
Action 2, Alternative 1	N	N	N	N	N	N	N	N	N
Action 2, Alternative 2	N	N	N	N	N	N	N	N	N

N = no impact beyond status quo anticipated by the option on the component.
Y = an impact beyond status quo is possible if the option is implemented.

Differences between direct and indirect effects are primarily linked to the time and place of impact. Direct effects are caused by the action and occur at the same time and place. Indirect effects occur later in time and/or are further removed in distance from the direct effects (40 CFR 1508.27). For example, the direct effects of an alternative which lowers the harvest level of a target fish could include a beneficial impact to the targeted stock of fish, a neutral impact on the ecosystem, and an adverse impact on net revenues to fishermen, while the indirect effects of that same alternative could include beneficial impacts on the ability of Steller sea lions to forage for prey, neutral impacts on incidental levels of PSC, and adverse impacts in the form of economic distribution effects, for example, reducing employment and tax revenues to coastal fishing communities.

1.8 Potential Impacts on Marine Resources

1.8.1 Pacific Halibut Stock

The exploitable biomass from the coastwide projection and Area 2C and 3A projections is expected to increase during the next 10 years. Additional descriptive information on surveys, stock assessments, and research on halibut can be found in detail in the 2007 Report of Assessment and Research Activities (IPHC 2007). Further details on the management, production history, and life history of halibut are described in Section 3.7.2 of the SEIS (NMFS 1998) and the 2004 IPHC annual report.

Halibut is fully utilized. Three major categories of use occur in Alaska for halibut: commercial IFQ, sport, and subsistence (Figure 2). Commercial IFQ harvests account for the largest portion of total use in Area 2C, comprising approximately 72% of the removals, not counting approximately 5% for bycatch and wastage. Sport users are divided into two subcategories: guided (charter) and non-guided. Approximately 13% of the total removals come from the charter sector and 7% from the non-guided sector. Subsistence (personal use) comprises the smallest portion of cultural use at 4% of the total removals. Wastage removals represent the mortality of legal-sized halibut due to lost or abandoned gear in the commercial IFQ fishery, and of sublegal-sized halibut discarded in the halibut fishery. Only legal sized fish in the wastage category are deducted from the Total CEY. Since the implementation of the QS fisheries in the 1990s, the total mortality of legal-sized halibut from lost gear in all areas has been reduced. It declined from 410,000 lb in 1998 to 21,000 in 2006 in Area 2C and from 177,000 lb in 1996 to 50,000 lb in 2006 in Area 3A (Table 19). Bycatch mortality accounts for halibut that die from being caught in other fisheries. The 2005 bycatch mortality estimate of 140,000 lb Mlb in Area 2C is the lowest since 1987 but

similar to the estimates for the last several years (Table 19). Sub-legal halibut are those discarded in the commercial fisheries that are less than 32 inches in length. In 2006, halibut removals totalled approximately 14.17 Mlb in Area 2C. An additional 2.3 Mlb of sub-legal mortality also occurred in Area 2C (G. Williams, pers. comm.).

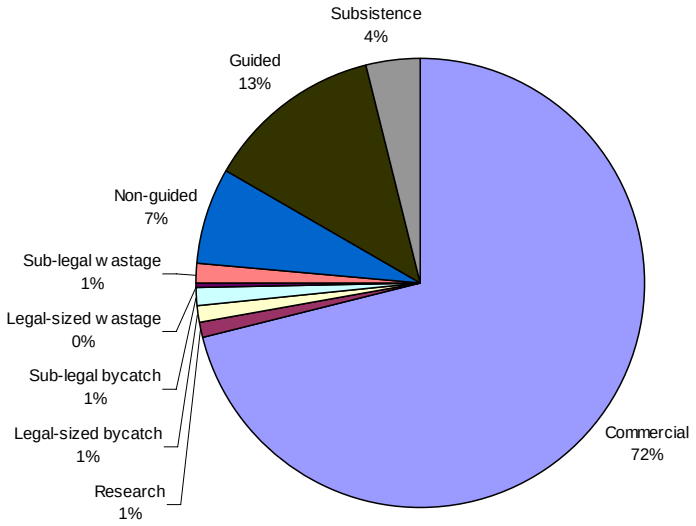

Figure 2 Five year average (2002–2006) of halibut removed by category in Area 2C.

In 2006, total CEY removals were approximately 32.8 Mlb in Area 3A. An additional 2.3 Mlb of sub-legal mortality also occurred (G. Williams, pers. comm.). Commercial IFQ harvests account for the largest portion of total use, comprising approximately 70% of the removals, not including approximately 11% of bycatch and wastage (Figure 3). Approximately 11% of the total removals come from the charter sector and 6% from the non-guided sector. Subsistence comprises the smallest portion of cultural use at 1% of total removals. Since the implementation of the QS fisheries, wastage has remained less than 150,000 lb, annually. Bycatch mortality of 1.32 Mlb in Area 3A in 2005 and 2006 was higher than the lowest estimate of 1.15 Mlb in 1997 (Table 19).

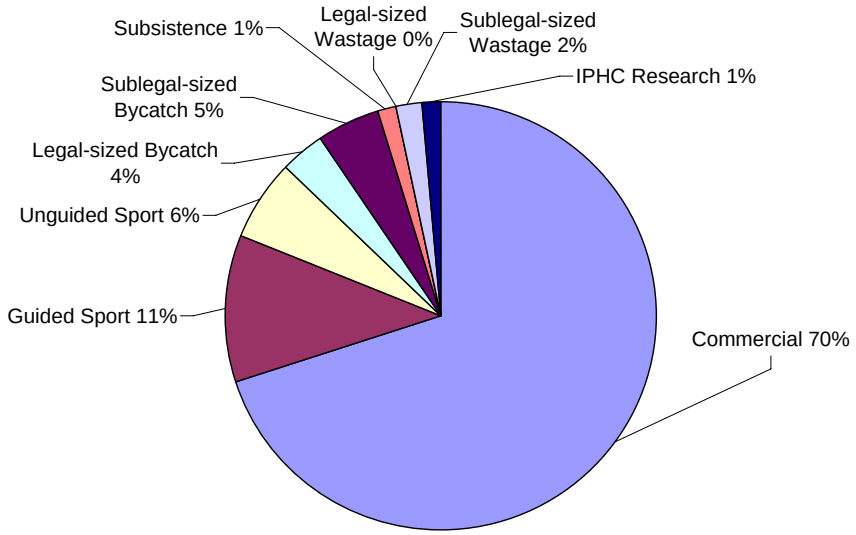

Figure 3 Five year average (2002–2006) of halibut removed by category in Area 3A

With the exception of the charter sector in Areas 2C and 3A, and a minimal increase in subsistence harvest, other removals have remained stable. The increase in growth for the charter sector has resulted in an increase in charter halibut harvest. As these removals increase, harvests from the charter sector reduce the allocation available for the commercial IFQ sector. The commercial IFQ sector catch limit is allocated among commercial halibut QS holders. Each QS holder receives a percentage of the total poundage available for commercial IFQ harvest within a year. This poundage comprises an IFQ.

Each year, the IPHC determines the abundance of halibut in each area (exploitable biomass) using a combination of harvest data from the commercial, recreational, and subsistence fisheries and information collected during scientific surveys. The biological target level for total removals in each regulatory area is the product of a fixed harvest rate and the estimate of exploitable biomass. This is called the "total constant exploitation yield" or "Total CEY," and is the target level for total removals (in net lb[23]) for an area in the coming year. The IPHC subtracts estimates of the total non-commercial removals for the up coming year from the Total CEY. These removals include harvest from recreational anglers, subsistence users, wastage, and bycatch mortalities[24]. The portion of the Total CEY that remains after the removals are subtracted is the CEY available for the commercial IFQ longline sector, or "Fishery CEY." The actual fishery catch limit, or quota, is set with reference to this Fishery CEY.

The IPHC sets catch limits for the commercial IFQ sector in proportion to halibut abundance in each regulatory area. This harvest philosophy protects against overharvest of what may be separate, but unknown, genetic populations, and spreads fishing effort over the entire range to prevent regional depletion. Small scale local depletion does not have a significant biological effect on the resource as a whole. The IPHC considers the halibut resource to be a single population. Egg and larval drift and subsequent counter migration by young halibut cause significant mixing within the population. Ultimately, counter migration and local movement tend to fill in areas with low halibut density, although continued high exploitation will maintain local depletion. However, estimates of local biomass and information about immigration and migration rates on a high geographical resolution are not available to manage small areas.

[23] Net weight = 75 percent of round weight

[24] The IPHC does not currently account for mortality resulting from the release of fish in the sport fishery.

Table 19 History of Halibut Removals in Area 2C and Area 3A 1995-2006 (Mlb net weight) (Source: G. Williams)

Year	Total CEY	Fishery CEY	Commercial IFQ Catch	Sport			Bycatch Mortality (Legal Sized Fish)	Personal Use (Subsistence)	Wastage (Legal Sized Fish)	TOTAL CEY REMOVALS
				Guided	Unguided	Total				
Area 2C										
1995	13.94	8.54	7.761	0.986	0.765	1.751	0.219	n/a	0.054	9.785
1996	n/a	n/a	8.737	1.187	0.943	2.129	0.233	n/a	0.044	11.143
1997	13.92	11.41	9.753	1.034	1.139	2.172	0.260	n/a	0.040	12.225
1998	17.70	15.48	9.666	1.584	0.917	2.501	0.218	0.170	0.410	12.965
1999	12.80	10.49	9.902	0.939	0.904	1.843	0.233	0.170	0.067	12.215
2000	8.44	6.31	8.266	1.132	1.126	2.258	0.230	0.170	0.038	10.962
2001	11.20	8.78	8.273	1.202	0.723	1.925	0.220	0.170	0.037	10.625
2002	10.66	8.50	8.455	1.275	0.814	2.090	0.180	0.170	0.026	10.921
2003	12.00	9.11	8.286	1.412	0.846	2.258	0.167	0.170	0.025	10.906
2004	20.00	17.00	10.116	1.750	1.187	2.937	0.149	0.628	0.031	13.861
2005	14.90	11.80	10.489	1.952	0.845	2.798	0.140	0.598	0.032	14.057
2006	13.73	10.33	10.374	2.027	1.004	3.032	0.144	0.598	0.021	14.169
Area 3A										
1995	31.16	16.87	18.142	2.845	1.670	4.515	1.460	0.097	0.128	24.342
1996	n/a	n/a	19.318	2.822	1.920	4.742	1.403	0.097	0.177	25.737
1997	40.66	33.55	24.235	3.413	2.100	5.514	1.150	0.097	0.074	31.070
1998	45.44	38.71	24.538	2.985	1.717	4.702	1.490	0.074	0.154	30.958
1999	31.80	24.67	24.310	2.533	1.695	4.228	1.595	0.074	0.117	30.324
2000	18.98	11.94	18.166	3.140	2.165	5.305	1.210	0.074	0.059	24.814
2001	27.80	21.89	21.100	3.132	1.543	4.675	1.700	0.074	0.065	27.614
2002	30.96	24.14	22.614	2.724	1.478	4.202	1.180	0.074	0.139	28.209
2003	40.00	34.22	22.324	3.382	2.046	5.427	1.364	0.074	0.068	29.257
2004	36.50	30.00	24.717	3.668	1.937	5.606	1.520	0.280	0.076	32.199
2005	32.90	26.30	25.228	3.689	1.984	5.672	1.320	0.429	0.156	32.805
2006	32.18	24.94	24.908	3.947	2.141	6.088	1.321	0.429	0.050	32.796

Sources:

1) Guided and Unguided Sport, 1995-1996: Public review draft, NPFMC EA/RIR for Limited Entry into the Charter Halibut fisheries in Areas 2C and 3A, Tables 3 & 4.

2) Guided Sport, 1997-2006: ADF&G table dated Nov. 20, 2006 titled "Charter Halibut Harvests in IPHC Area 2C and 3A"

3) Unguided Sport 1997-2004: Scott Meyer (ADF&G), worksheet titled "2C-3A_HarvestTables.xls"

4) Unguided Sport 2005-2006: ADF&G letter to IPHC dated Oct. 23, 2006

5) Commercial IFQ catch, 1995-2005: IPHC Annual Reports, Appendix I, Table 5. Does not include research catch.

6) Commercial IFQ catch, 2006: IPHC Bluebook for 2006. Data are preliminary.

7) All other categories, 1995-2005: IPHC Bluebooks

8) All other categories, 2006: Gregg Williams (pers. comm.) and IPHC Bluebooks.

As described by Clark and Hare (2005), the annual exploitable biomass is estimated by fitting a stock assessment model using available data from the commercial IFQ sector and scientific surveys in each area. Total CEY is calculated by applying a target harvest rate (22.5% in Areas 2C and 3A in 2007) to the exploitable biomass estimate. The commercial IFQ fishery CEY is calculated by subtracting estimates of all unallocated removals (which include legal-sized bycatch, legal-sized wastage, subsistence and personal use, and charter and non-guided catch) from the total CEY (Figure 4). The IPHC uses harvest estimates from the previous year for all non-commercial categories except sport harvest because removal numbers are stable between years. Because sport harvest has continued to increase over the last decade, a projection method based on historical harvest levels is used to estimate harvest for the year in which commercial IFQ quota is established.

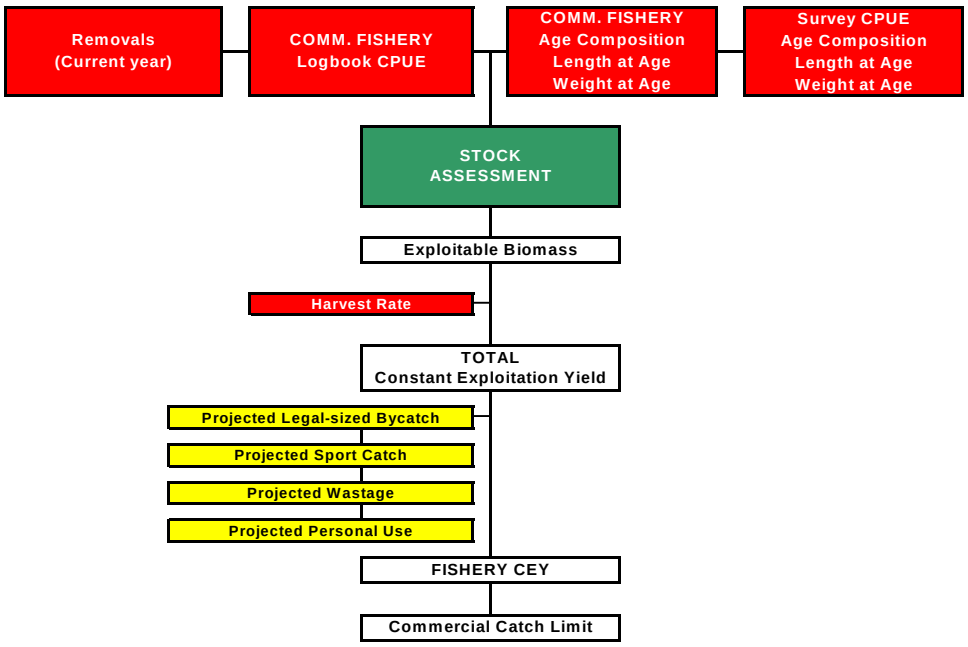

Figure 4 The IPHC stock assessment and catch limit setting process

After the non-commercial harvest deductions are made, the remainder comprises the commercial IFQ fishery CEY. The commercial IFQ catch limit is set based on the fishery CEY. In setting the commercial IFQ catch limits, the IPHC considers area-specific harvest policy objectives and also applies its Slow Up/Fast Down[25] policy in setting the commercial IFQ fishery catch limits. Thus, the commercial IFQ catch limits may be greater than or less than, and do not necessarily equal, the fishery CEY. The commercial IFQ catch limit is currently only set for commercial IFQ fisheries for fixed gear. The nature of this process means that changes in the charter harvest affect the commercial IFQ catch limits with a lag, and not immediately on a pound for pound basis.

Growing concerns about net migration from the western to the eastern Gulf of Alaska have led the staff to doubt the accuracy of the closed-area assessments that have been done for many years (Clark and Hare 2006). In 2006, IPHC staff changed the structure of its stock assessment model because of new scientific information that modified previous model assumptions about migration between regulatory areas. The

[25] The IPHC can recommend a Fishery CEY that is responsive to rapid changes in halibut abundance. For example, if the halibut stock is rapidly declining, the Commission may recommend a lower fishery CEY incremented over several years to dampen the effects of the stock decline. Conversely, if the stock is in rapid increase, the fishery CEY may be increased over number of years rather than one large increase.

new estimation technique considered tagging data and mortality rates, which suggested that a fraction of halibut beyond eight years of age continue to migrate eastward. This decision changed the traditional "closed-area" approach used by the IPHC. The authors reported that a comparison of total yield between the coastwide assessment with survey apportionment and a closed-area assessment produced similar biomass estimates, but the distribution of yield among regulatory areas was much different. The coastwide assessment indicated more biomass was available in Areas 3B and 4 and less in Area 2 than the levels calculated using the closed area model. Figure 5 shows projected CEY on the basis of the 2006 coastwide stock assessment, a 20% coastwide target harvest rate, and the biomass distribution estimated from the 2004-2006 survey CPUE by area.

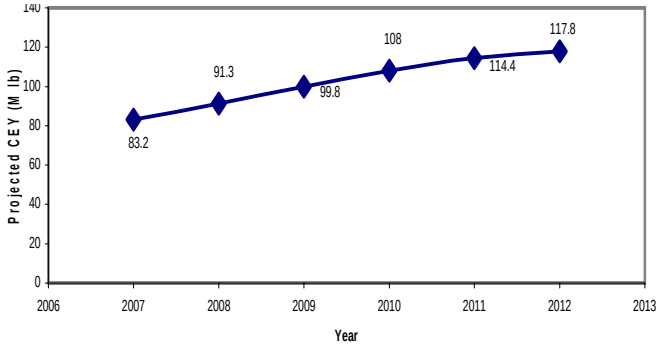

Figure 5 Coastwide CEY projection through 2012 (IPHC 2007)

As described in a news release by IPHC staff[26], "Commission staff introduced a new approach to assessing the biomass of halibut in the 2006 stock assessment and recommended regulatory area catch limits based on this approach. This approach involved assessing the abundance of the halibut stock as a single coastwide unit, rather than independently estimating the biomass of each regulatory area (closed-area assessments), as had been done over the previous two decades. The coastwide approach was taken primarily in response to new information from tagging programs, which showed greater levels of movement by adult fish than previously believed, but also to resolve some disparities among independent estimates of stock biomass distribution. The total stock biomass identified by the coastwide assessment is approximately the same as the sum of that from the traditional regulatory area assessments. The staff used a three-year average of survey catch rate, times bottom area in each regulatory area, to partition the coastwide biomass to regulatory biomass. However, this methodology for partitioning the coastwide biomass estimate was not endorsed by the Commission at this time, in part because the Commission wishes to have a more thorough and broader review of any new methodologies. The Commission instructed the staff to examine additional methods of biomass partitioning for the 2007 stock assessment, in conjunction with greater dialogue with industry and other stock assessment experts, and to incorporate the results of this review into the 2007 stock assessment. The Commission therefore chose to continue with the stock assessment methodology adopted over the past decade as the basis for calculation of 2007 regulatory area constant exploitation yield (CEY) and corresponding catch limits. The Commission staff accordingly employed the previous closed-area stock assessment methodology to develop catch limit recommendations for 2007."

In June 2007 the IPHC staff conducted a public workshop with independent peer reviewers and the public to look at the technical details of the model, the data going into the model, and the method for apportioning the coastwide biomass into IPHC regulatory area biomass. A staff summary of that meeting is provided at: http://www.iphc.washington.edu/halcom/meetings/workshop2007/SAW07Reportfinal.pdf.

[26] http://www.iphc.washington.edu/halcom/pubs/annmeet/2007/cdm2007.pdf

Commercial IFQ Removals

The groundfish (FMPs) for the Bering Sea/Aleutian Islands (BSAI) and Gulf of Alaska (GOA) designated Pacific halibut as a prohibited species to any new commercial development due to its historical usage by the longline (or setline) sector. The commercial IFQ halibut fishing fleet is diverse, using various types of longline gear and strategies. An individual fishing quota program was implemented in 1995 (50 CFR 300.60 through 300.65). The IFQ program enabled an eligible vessel to fish any time between March 5 and November 15 in 2006. Total setline CEY for Alaska waters is estimated to be high, at just over 65 Mlb, which indicates the halibut resource is robust (http://www.iphc.washington.edu/halcom/newsrel/2007/nr20070123.htm). In Area 2C, the Fishery CEY has ranged from 8.5 Mlb to 10.93 Mlb during the last five years. Total setline CEY for Area 3A[27] is estimated to be high at just over 32 Mlb, but below its 2003 peak of 40 Mlb. Fishery CEY has ranged between 24 Mlb and 34 Mlb during the last five years (Table 20).

Halibut begin recruiting to longline gear at approximately 60 cm in length, but the commercial IFQ minimum size limit is 32 inches (82 cm). The fishery ranges from shallow inshore waters to as deep as 275 meters along the continental shelf. The directed catch consists of individuals chiefly from 7 kg to 121 kg. The average size in the commercial IFQ catch in 1996 was between 9 kg. and 20 kg depending on the area caught; the average age was 12 years (Forsberg, J., Unpub 1997).

The IFQ program has kept catches within harvest limits, reduced the amount of lost gear and wastage due to "ghost fishing," and allowed the commercial IFQ sector to operate during a long period which has had the ancillary affect of increasing safety. The annual amount of IFQ for the commercial hook and line fisheries is established annually by the Secretary of Commerce, based on recommendations from the IPHC.

Harvest from the commercial IFQ sector is tracked by NMFS using a catch accounting system that deducts harvest from an IFQ holder's account. This information is also used to enforce the total annual quota as well as individual IFQ accounts. Thus, since the IFQ program, annual harvest limits have not been exceeded by a significant margin. The IFQ program has an overage/underage provision that balances an IFQ holder's account, year to year. This regulation results in a long-term balance of harvest at the catch limit and allows IFQ holders to move small amounts of halibut between years.

Halibut bycatch and wastage occurs in the groundfish and salmon fisheries operating in waters off Alaska. The effects of these fisheries on halibut are primarily managed by conservation measures developed and recommended by the Council over the entire history of the FMPs for the BSAI and GOA and implemented by Federal regulation. These measures can be found at 50 CFR 679.21 and include catch limitations on a year round and seasonal basis. They are discussed further in the following documents:

- Sections 3.6.1 and 3.6.2 of the GOA and BSAI FMPs (Council, 2005a and b) cover management of the bycatch of halibut in the groundfish fisheries. The FMPs are available at http://www.fakr.noaa.gov/npfmc/default.htm.
- Section 3.5 of the PSEIS (NMFS 2004) reviews the effects of the groundfish fisheries on halibut. The PSEIS is available at http://www.fakr.noaa.gov/sustainablefisheries.seis/intro.htm.
- Charter 7 of the Alaska Groundfish Harvest Specification EIS (NMFS 2007) provides an overview of prohibition species catch management, including halibut bycatch.

[27] at a harvest rate of 22.5 percent

The annual amount of halibut bycatch and wastage is treated as a hard cap in groundfish fisheries. Fisheries are often closed to directed fishing when halibut bycatch allotments are taken. As a result, fishing morality has remained relatively constant; with the total amounts depending on the type of fisheries being prosecuted and total effort. In Area 2C and Area 3A, bycatch and wastage have accounted for approximately 4% and 11% of total removals, respectively.

The catch limit for the commercial IFQ longline sector is set once all other removals are deducted from the available yield. The increase in charter removals results in a reduction of the commercial IFQ sector harvest over an extended period of time. In a given year, non-commercial removals are not necessarily deducted on a pound for pound basis. For example, harvest quota for the commercial sector set in 2007 includes historical sport harvest from 2006, but the 2007 sport harvest is unknown. Thus, an increase of sport harvest above the level predicted in 2006 is accounted for in future commercial IFQ quotas. Over the long-term, this overage is balanced, resulting in a loss of commercial QS. This same relationship would occur if any other non-commercial removals increased rapidly (and unpredictably) from year to year. Of the non-commercial removals accounted for by the IPHC, the charter harvest has increased at a rapid rate, whereas other removals have remained relatively constant. The relationship between the charter and commercial sectors has resulted in consideration of numerous actions to control charter halibut removals, including the proposed action.

Sport Fishing Removals

Sport fishing for halibut in Southeast Alaska is an important recreational activity for resident and non-resident anglers. Sport harvests rapidly increased in the late 1980s to mid-1990s as indicated by a continued increase in targeted effort (Tersteeg and Jaenicke 2005). A portion of the marine sport fishing effort is directed at halibut and State-managed groundfishes, including rockfishes, lingcod, and sharks. Fishing effort is mostly concentrated around Juneau, Ketchikan, Sitka, Wrangell, and Petersburg. However, substantial effort is reported near remote fishing lodges and smaller communities throughout the region, such as Craig, Gustavus, and Yakutat (Tersteeg and Jaenicke 2005). These remote communities offer charter and bareboat services. Bareboat services allow anglers to rent a vessel that is unguided. These anglers are generally provided with instruction from a lodge about good fishing locations and technique.

As reported in IPHC (2005), Alaska sport harvest estimates are derived from a statewide postal survey in conjunction with creel surveys at points of landing. Final estimates lag by one year and are derived from a combination of linear projections of halibut harvested in the previous five years, current average weights, and current in-season data. Charter halibut harvests between 1995 and 2005 nearly doubled in Area 2C (from 986,000 to 1,950,000 lb) and account for approximately 13% of the average halibut removals during the last five years).

Area 3A supports the largest recreational fishery for Pacific halibut. Sport harvest grew from about 18,000 fish in 1977 to nearly 334,000 fish in 2005. Cook Inlet fisheries account for most of the harvest, followed by fisheries based in Seward, Valdez and Whittier, Kodiak, and Yakutat. There are increasing numbers of lodges that offer guided halibut fishing, particularly around Kodiak and Afognak islands, and in Prince William Sound. Area 3A sport harvest estimates are derived from a statewide postal survey in conjunction with biological sampling and interviews at major points of landing. Final estimates lag by one year. Current year's harvests are derived from linear projections of numbers of halibut harvested in the previous five years and current average weights. Charter halibut harvests ranged from 2.533 Mlb to 3.689 Mlb during 1995 to 2005 and accounted for approximately 11% of the average halibut removals during the last five years. Charter harvest accounts for about 65% of the total recreational harvest.

Regulations by both Federal and State agencies affect the halibut fishery. Federal sportfishing regulations are found at 50 CFR 300.62. The 2006 annual measures for halibut fisheries were published at 71 FR 10850, Part 24. The GHL regulations are published at 50 CFR 300.65.

Federal regulations require the following:

- The daily bag limit is a two-fish daily limit, with one of those fish required to be 32 inches or less
- The possession limit is equal to two daily bag limits
- The sport fishing season February 1 – December 31
- No person shall fillet, mutilate, or otherwise disfigure a halibut in any manner that prevents the determination of minimum size or the number of fish caught, while onboard the catcher vessel.
- No halibut caught for sport harvest shall be offered for sale, bartered, or traded.
- No halibut caught while sport fishing shall be possessed on board a vessel when other fish or shellfish aboard the said vessel for destined for commercial use, sale, trade, or barter.
- The operator of a charter vessel shall be liable for any violations of these regulations committed by a passenger aboard said vessel.

State of Alaska fishing regulations for the charter fishery are included below.

- Most anglers must have a current year's Alaska sport fishing license. There are three exceptions:
  - Resident and non-resident anglers younger than 16 do not need a sport fishing license.
  - Alaska resident anglers 60 and older must have a free ADF&G Permanent ID Card.
  - Alaska resident disabled veterans (50% or greater) must have a free ADF&G Disabled Veteran's Permanent ID Card.
- When a fish is landed and killed it becomes part of the bag limit of the person originally hooking it. Once you have attained your bag limit, you are not allowed to catch and keep halibut for anyone else on the vessel that same day.

The sport sector has a certain level of catch-and-release mortality, which results from physiological injury, stress, or handling. In some high use fisheries such as the Madison River trout fisheries in Yellowstone National Park, the mortality rate is cumulative because fish may be released multiple times. The level of mortality depends on several factors, including the hooking location, handling time, type of gear used, environmental characteristics (e.g., warm water), and a species physiology. Meyer (2007) provided a brief discussion of release mortality as it relates to halibut. He estimated that the release mortality rate for halibut was approximately 5% in Area 2C, which means approximately 5% of the halibut caught and released die of handling injuries soon after.

Subsistence Removals

The distinctions between sport and subsistence are clouded by differing legal and cultural interpretations by both resource managers and users, and since rod and reel gear is legal in the subsistence fishery. The IPHC did not have a formal regulatory definition of subsistence prior to 2002; however, it did attempt to track subsistence harvest taken under a personal use category, leaving only sport harvests under the sportfishing category. In 2002, the IPHC adopted regulatory language defining subsistence ("Customary and Traditional Fishing in Alaska"), based on a recommendation by the Council. Federal regulations now recognize and define a legal subsistence fishery for halibut in Alaska (70 FR 16742, April 1, 2005). Subsistence removals totaled 598,000 lb (net weight) in 2005 in Area 2C (Fall *et al*. 2006). Subsistence/personal use harvest has increased in Area 3A from 286,000 lb in 2003 to 429,000 lb in 2005. Subsistence fishery regulations are found at 50 CFR 300.60–300.66. Subsistence harvest is tracked by ADF&G using survey respondent methods including public outreach, mailed household surveys, and community visits. Fall *et al* (2006) provides a detailed description of the survey methods and response

rates. Subsistence/personal use harvest has remained relatively stable during the last three years (Table 3). Subsistence regulations are found at 50 CFR 300.60–300.66.

Effect of alternatives: The proposed alternatives address resource allocation issues. They would affect harvest levels and fishing practices of individuals participating in the charter halibut sector, but not the health of the halibut stock. Regardless of the amount of halibut biomass taken by a sector, no adverse impacts to the halibut resource would be expected because the IPHC factors most resource removals in the halibut stock assessment when setting annual catch limits. Further, Hare and Clark (2006) report that total yield is increasingly reduced as more of the CEY is taken as bycatch (Figure 6). They report, "The sport fishery, conversely, has virtually no impact on total yield. In other words, in terms of total yield, a pound of sport catch is worth the same as a pound of commercial catch but a pound of bycatch would be worth more as a pound of commercial catch." The IPHC does not currently explicitly account for release mortality in the halibut sport sector. However, release mortality for the sport sector is not expected to substantially increase above status quo under any of the alternatives. In addition, the impact of a different size frequency between the set-line survey and the recreational catch is relatively minor (Hare and Clark 2006). Therefore, none of the proposed alternatives to allocate a percentage of total removals between the commercial IFQ and charter sectors are expected to significantly impact the halibut stock.

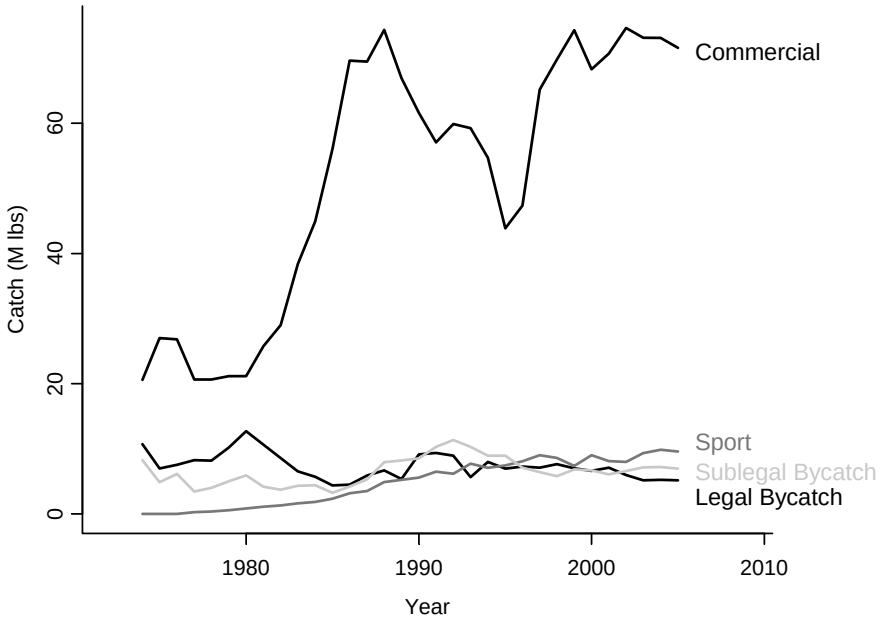

Figure 6 Commercial, sport (guided and non-guided), sublegal, and legal bycatch for all areas, 1974-2005 (Source: Hare and Clark, 2006)

1.8.2 Groundfish

In the charter sector, anglers may switch to target species other than halibut if halibut fishing is poor. The charter operator wants to satisfy the client and may do so by landing any species (Scott Meyer, pers. comm.). Thus, a regulatory constraint on halibut may influence the amount of other groundfish species caught in the charter fishery. The harvest of State-managed groundfish observed in the ADF&G port sampling program is usually inversely related to halibut harvest, but it is unknown if anglers switch target species when halibut fishing is poor or expend more effort to target other species. No in-depth analysis of these data has been done, and it may be impossible given the lack of information. It is likely that harvest of State-managed species will increase if the halibut stock declines in abundance.

A regulatory measure to restrict halibut harvest may be analogous to a decline in abundance. For certain anglers, halibut fishing may become less desirable the more difficult it is to optimize the poundage of fish harvested or to harvest two fish. The decision process for anglers is complex and data are not available to predict removals from the groundfish fisheries that may occur under the non-status quo alternatives.

The primary groundfish bycatch taken in the halibut charter fishery includes limited amounts of Pacific cod and rockfishes (primarily yelloweye and black), with lesser amounts of spiny dogfish, salmon shark, and lingcod. These species may be recorded in ADF&G data as having been caught on a halibut targeted trip, but they may become the target species during the trip because the halibut bag limit has been reached or fishing is poor. Some halibut trips may catch rockfish incidentally. State regulations require rockfish to be retained up to the bag limit; however, incidentally caught rockfish beyond an individual's bag limit must be released. Assessment of these released rockfish and associated bycatch mortality is difficult. Identification of rockfish species that are similar in appearance is difficult and calculation of a mortality rate is dependent on the depth that rockfish was caught, handling and release techniques, etc.

The 2006 SAFE (NMFS 2006) reports that in February 2006, the State of Alaska Board of Fisheries (BOF) allocated the Southeast Outside Demersal Shelf Rockfish complex (DSR) between the sport sector and commercial sector in the southeast Alaska. The OFL was 640 mt, and the ABC and TAC were equal to 410 mt. The BOF allocated 84% of the TAC to the commercial sector and reserved the remaining 16% for sport fishermen. This produced a 66 mt BOF allocation for the sport sector.

The SAFE report indicated that a directed DSR commercial sector in Area 2C did not occur in 2006 because of concerns about exceeding the ABC and TAC. Commercial IFQ fishermen did have an incidental catch of 215 mt. The SAFE report indicated that in 2006 approximately 64 mt of DSR rockfish was harvested in the sport sector, with 7 mt released. The sport sector (guided and unguided) exceeded its BOF allocation by about 5.5 mt, while the commercial IFQ sector took significantly less than its BOF allocation. Combined, the commercial IFQ and sport fisheries removed approximately 287 mt of DSR which was 70% of the 410 mt combined TAC, leaving 123 mt of the TAC unharvested. These estimates were presented as preliminary based on the best available data at the time (December 2006).

Recreational anglers also catch pelagic rockfish including dusky, yellowtail, and black rockfish. Sport fishing for these species is managed under ADF&G fishing regulations. Commercial harvest amounts for this species group is under their respective OFL and ABC in 2006. The ABC for the pelagic rockfish assemblage in the western Yakutat region and Eastern Alaska/Southeast Outside district was 736 mt in 2006 and 751 mt in 2007 (NMFS SAFE 20060. The commercial catch for the pelagic group was 174 mt in 2006, which was below the ABC which is set equal to the TAC. The OFL for the pelagic rockfish assemblage was 6,662 mt for the GOA, with 2,498 mt of commercial catch for the entire GOA. Harvest in the sport sector is not at a level high enough to cause the pelagic rockfish group to exceed the OFL. In 2004, the total harvest of all rockfish in the sport sector (including non-pelagic species) was 22.7 mt, which when added to the commercial catch would not have exceeded the ABC or OFL. An increase in sport harvest may constrain the commercial sector; however, rockfish stocks would still be managed within their biological benchmarks. For the previously described reasons, the impact of the alternatives is likely to be insignificant for pelagic rockfish stocks.

In Area 3A, rockfish species composition varies among ports. Many are taken incidental to halibut fishing, or as an alternate target if halibut fishing is poor or once the halibut bag limit has been reached. Black rockfish and yelloweye rockfish make up the vast majority of the charter harvest, with lesser amounts of dusky, dark, quillback, silvergray, and others. Black rockfish accounted for more than 70% of the harvest at Seward and Kodiak, but only 14%–44% at Whittier, Valdez, and Homer during the period 2003-2005. The percentage of yelloweye rockfish in the charter harvest during the same period ranged from 14% at Kodiak to over 50% at Whittier and Valdez (S. Meyer, pers. comm.). Black rockfish were

removed from the Federal groundfish FMP, and the Council recommended a similar action for dark rockfish to the Secretary in 2007.

In February 2006, the Board of Fisheries prescribed management provisions to control sport harvest of DSR (5 AAC 47.065) because of its concerns regarding 2001 and 2005 removals. It allocated 16% (66 mt for 2006) of the total allowable catch of DSR in the Southeast Outside Subdistrict to the sport sector in 2006. An over harvest of 71 mt in 2006 required further restrictions to the sport sector in 2007. Those measures (Table 20) are intended to reduce harvest and total mortality to within the sport fish allocation (R. Chadwick, pers. comm.). The impacts of the proposed options on rockfish removals are difficult to project, because behavioral changes under a new restrictive halibut harvest policy are unknown. Small increases in rockfish removals would increase sport harvest beyond its TAC; however, given the overall joint commercial and sport harvest, it is unlikely these removals would be of a magnitude to exceed the OFL or ABC. A future directed commercial fishery would be managed under the OFL. For this reason, the impacts on rockfish from the alternatives are not expected to be significant.

Table 20 Brief summary of projected biomass removal of Demersal Shelf Rockfish (DSR) in the outer coast of SE Alaska (SSEO/CSEO/NSEO), history of daily bag and annual limit of non-pelagic rockfish

Year	Biomass removal (mt)	Required retention of nonpelagic rockfish	SE Alaska regional daily bag and possession for non-pelagic rockfish	Annual Limit
1998 1999 2000 2001 2002 2003 2004 2005	47 73 80 71 87 74 104 90	None	Five per day, 10 in possession of which only 2 per day, 4 in possession could be yelloweye for most of SE Alaska. Since 1989, for the Sitka area (Sitka Sound, Salisbury Sound, and Peril Strait) and the Ketchikan area (Behm Canal, Clarence Strait, Tongass Narrows, Nichols Passage, George Inlet, Carroll Inlet, Thorne Arm, Revillagigedo Channel) the bag and possession limit was three rockfish, of which only one could be a yelloweye rockfish.	No annual limit for any rockfish
2006	71[a,b]	All non-pelagic rockfish caught must be retained until the bag limit is reached	Resident and nonresident daily bag limit of three non-pelagic rockfish, of which only one may be a yelloweye rockfish, possession limit of six fish of which only two may be a yelloweye rockfish.	Nonresident annual limit was three yelloweye rockfish.
2007	NA	All non-pelagic rockfish caught must be retained until the bag limit is reached	Resident bag limit is three non-pelagic rockfish only one of which may be a yelloweye rockfish; possession limit of six fish of which only two may be a yelloweye rockfish; Nonresident bag limit is two non-pelagic rockfish only one of which can be a yelloweye rockfish, possession limit of four fish of which only two may be a yelloweye rockfish; .	Nonresident annual limit is two yelloweye rockfish.

a) Projected
b) First year of allocation

Source: ADF&G

Lingcod is also a commercial and sport target species. Harvest levels in recent years have remained constant under strict sport slot limit regulations and seasons, and commercial quota limits (Table 21); however, in 2005 total catch increased to 16,281 fish from 9,549 in 2004. A harvest increase in the sport sector resulting from the alternatives would likely be small given the existing regulatory constraints.

Table 21 Estimated rockfish and lingcod harvest (number of fish) by charter anglers by area and year.

Year	Area 2C		Area 3A	
	Number of charter harvested rockfish	Number of charter-harvested lingcod	Number of charter harvested rockfish	Number of charter-harvested lingcod
1996	14,591	10,588	17,640	5,137
1997	13,077	9,355	17,036	6,737
1998	15,516	11,690	16,884	5,070
1999	24,815	11,264	18,756	5,150
2000	26,292	11,805	25,690	7,609
2001	29,509	8,961	28,273	6,813
2002	25,346	5,749	30,946	5,830
2003	27,991	6,551	28,415	7,836
2004	45,908	9,549	41,400	9,576
2005	NA	16,281	38,722	11,047

Source: ADF&G, Statewide Harvest Survey data.

Effect of alternatives: Rockfish and lingcod are commonly harvested in the sport halibut fishery and managed by ADF&G in State and Federal waters. There are no sport limits set (other than daily bag limits). None of these stocks are assessed in South Central Alaska.

The interaction of halibut catch and harvest of other groundfish species is poorly documented and not well understood. Any discussion of impacts from the proposed alternatives will be highly speculative. Other species taken incidentally in sport charter halibut fisheries include sculpin, arrowtooth flounder and several other flatfishes, spiny dogfish, sleeper shark, salmon shark, and greenling. No sport fish harvest estimates are available for these species. However, the commercial catch limit is set for these species and none of the catches of these species has historically exceeded their respective OFLs. The impact of the alternatives on these species is expected to be insignificant.

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1.8.3 Endangered or Threatened Species

The Endangered Species Act of 1973 as amended [16 U.S.C. 1531 et seq; ESA], provides for the conservation of endangered and threatened species of fish, wildlife, and plants. It is administered jointly by NMFS for most marine mammal species, marine and anadromous fish species, and marine plants species and by the U.S. Fish and Wildlife Service (USFWS) for bird species, and terrestrial and freshwater wildlife and plant species.

The designation of an ESA listed species is based on the biological health of that species. The status determination is either threatened or endangered. Threatened species are those likely to become endangered in the foreseeable future [16 U.S.C. § 1532(20)]. Endangered species are those in danger of becoming extinct throughout all or a significant portion of their range [16 U.S.C. § 1532(20)]. Species can be listed as endangered without first being listed as threatened. The Secretary of Commerce, acting through NMFS, is authorized to list marine fish, plants, and mammals (except for walrus and sea otter) and anadromous fish species. The Secretary of the Interior, acting through the U.S. Fish and Wildlife Service (USFWS), is authorized to list walrus and sea otter, seabirds, terrestrial plants and wildlife, and freshwater fish and plant species.

In addition to listing species under the ESA, the critical habitat of a newly listed species must be designated concurrent with its listing to the "maximum extent prudent and determinable" [16 U.S.C. § 1533(b)(1)(A)]. The ESA defines critical habitat as those specific areas that are essential to the conservation of a listed species and that may be in need of special consideration. Federal agencies are prohibited from undertaking actions that destroy or adversely modify designated critical habitat. Some species, primarily the cetaceans, which were listed in 1969 under the Endangered Species Conservation Act and carried forward as endangered under the ESA, have not received critical habitat designations.

After reviewing the current status of the listed species, designated critical habitat, and the potential effects of the halibut fisheries, NMFS Sustainable Fisheries concludes that this sector off Alaska (which uses gear unlikely to generate bycatch of finfish, seabirds or marine mammals) will not affect ESA-listed species or designated critical habitat, pursuant to Section 7 of the Endangered Species Act. Therefore, the ESA does not require a consultation for this fishery. Halibut do not interact with any listed species and do not comprise a measurable portion of the diet of any listed species nor do any of the species comprise a measurable portion of their diet. No interactions between the charter halibut fisheries and any listed species have been reported. Table 22 identifies the species listed as endangered and threatened under the ESA.

Table 22 ESA listed and candidate species that range into the BSAI and GOA groundfish management areas.

Common Name	Scientific Name	ESA Status
Blue Whale	*Balaenoptera musculus*	Endangered
Bowhead Whale	*Balaena mysticetus*	Endangered
Fin Whale	*Balaenoptera physalus*	Endangered
Humpback Whale	*Megaptera novaeangliae*	Endangered
Right Whale[1]	*Balaena glacialis*	Endangered
Sei Whale	*Balaenoptera borealis*	Endangered
Sperm Whale	*Physeter macrocephalus*	Endangered
Steller Sea Lion (Western Population)	*Eumetopias jubatus*	Endangered
Steller Sea Lion (Eastern Population)	*Eumetopias jubatus*	Threatened
Chinook Salmon (Lower Columbia R.)	*Oncorhynchus tshawytscha*	Threatened
Chinook Salmon (Upper Columbia R. Spring)	*Oncorhynchus tshawytscha*	Endangered
Chinook Salmon (Upper Willamette)	*Oncorhynchus tshawytscha*	Threatened
Chinook Salmon (Snake River spring/summer)	*Oncorhynchus tshawytscha*	Threatened
Chum Salmon (Hood Canal Summer run)	*Oncorhynchus keta*	Threatened
Coho Salmon (Lower Columbia R.)	*Oncorhynchus kisutch*	Threatened
Steelhead (Snake River Basin)	*Oncorhynchus mykiss*	Threatened
Steller's Eider [2]	*Polysticta stelleri*	Threatened
Short-tailed Albatross [2]	*Phoebaotria albatrus*	Endangered
Spectacled Eider[2]	*Somateria fishcheri*	Threatened
Kittlitz's Murrelet[2]	*Brachyramphus brevirostris*	Candidate
Northern Sea Otter	*Enhydra lutris*	Threatened
Olive Ridley turtle	*Lepidochelys olivacea*	Threatened/Endangered
Loggerhead turtle	*Caretta caretta*	Threatened
Green turtle	*Chelonia mydas*	Threatened/Endangered
Leatherback sea turtle	*Dermochelys coriacea*	Endangered

[1]NMFS designated critical habitat for the northern right whale on July 6, 2006 (71 FR 38277).

[2] The Steller's eider, short-tailed albatross, spectacled eider, and Northern sea otter are species under the jurisdiction of the USFWS. For the bird species, critical habitat has been established for the Steller's eider (66 FR 8850, February 2, 2001) and for the spectacled eider (66 FR 9146, February 6, 2001). The Kittlitz's murrelet has been proposed as a candidate species by the USFWS (69 FR 24875, May 4, 2004).

1.8.4 Seabirds

Because halibut fisheries are Federally regulated activities, any negative affects of the fisheries on listed species or critical habitat and any takings[28] that may occur are subject to ESA Section 7 consultation. NOAA Fisheries Service initiates the consultation and the resulting biological opinions are issued to NOAA Fisheries Service. The Council may be invited to participate in the compilation, review, and analysis of data used in the consultations. The determination of whether the action "is likely to jeopardize the continued existence of" endangered or threatened species or to result in the destruction or modification of critical habitat is the responsibility of the appropriate agency (NOAA Fisheries Service or USFWS). If the action is determined to result in jeopardy, the opinion includes reasonable and prudent measures that are necessary to alter the action so that jeopardy is avoided. If an incidental take of a listed species is expected to occur under normal promulgation of the action, an incidental take statement is appended to the biological opinion.

In addition to those species listed under the ESA, other seabirds occur in Alaskan waters which may indicate a potential for interaction with halibut fisheries. The most numerous seabirds in Alaska are northern fulmars, storm petrels, kittiwakes, murres, auklets, and puffins. These groups, and others, represent 38 species of seabirds that breed in Alaska. Eight species of Alaska seabirds breed only in Alaska and in Siberia. Populations of five other species are concentrated in Alaska but range throughout the North Pacific region. Marine waters off Alaska provide critical feeding grounds for these species as well as others that do not breed in Alaska but migrate to Alaska during summer, and for other species that breed in Canada or Eurasia and overwinter in Alaska. Additional discussion about seabird life history, predator-prey relationships, and interactions with commercial fisheries can be found in the 2004 FPSEIS. Since charter halibut gear are typically rod-and-reel with a maximum of two hooks, interactions with seabirds are unlikely. There are no known reported takes of seabirds in charter fisheries off Alaska, based on best available information.

None of the alternatives under consideration would affect the prosecution of the halibut fisheries in a way not previously considered in consultations. The proposed alternatives to the status quo would limit charter halibut removals and any associated bycatch, although seabirds are not a known incidental harvest in this fishery. A likely result of the proposed alternatives is that commercial halibut harvests may increase; this fishery is subject to strict seabird avoidance requirements (http://www.fakr.noaa.gov/protectedresources/seabirds/guide.htm). None of the alternatives would affect takes of listed species and therefore, none of the alternatives are expected to have a significant impact on endangered or threatened species.

Short-tailed albatross. In 1997, NOAA Fisheries Service initiated a Section 7 consultation with USFWS on the effects of the halibut fishery off Alaska on the short-tailed albatross. USFWS issued a Biological Opinion in 1998 that concluded that the halibut fishery off Alaska was not likely to jeopardize the continued existence of the short-tailed albatross (USFWS, 1998). USFWS also issued an Incidental Take Statement of two short-tailed albatross in two years (1998 and 1999), reflecting what the agency anticipated the incidental take could be from the proposed actions. No other seabirds interact with the halibut fisheries. Under the authority of ESA, USFWS identified non-discretionary reasonable and prudent measures that NOAA Fisheries Service must implement to minimize the impacts of any incidental take.

[28] The term "take" under the ESA means "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct" (16 U.S.C. '1538(a)(1)(B).

1.8.5 Marine Mammals

The charter halibut sector in the EEZ of Alaska is classified as Category III fishery under the Marine Mammal Protection Act. A fishery that interacts only with non-strategic stocks and whose level of take has insignificant impact on the stocks is placed in Category III. No takes of marine mammals by the charter halibut sector off Alaska have been reported; therefore, none of the alternatives is expected to have a significant impact on marine mammals.

1.8.6 Biodiversity and the Ecosystem

Halibut is one of four groundfish, in terms of biomass as measured by the trawl surveys, which dominate the Gulf of Alaska ecosystem (S. Gaichas, pers. comm.). The others include arrowtooth flounder, walleye pollock, and Pacific cod (in order of importance). Halibut is an apex predator in the GOA, and appears to be dependent on pollock stocks as pollock comprised over half of adult halibut's diet composition measured in the early 1990s. Most mortality on halibut is from fishing because they have few natural predators, especially as adults.

Halibut harvests by the charter sector, as well as all other harvests, removes predators, prey, or competitors and thus could conceivably alter predator-prey relationships *relative to an unfished system*. Studies from other ecosystems have been conducted to determine whether predators were controlling prey populations and whether fishing down predators produced a corresponding increase in prey. Similarly, the examination of fishing effects on prey populations has been conducted to evaluate impacts on predators. Finally, fishing down of competitors has the potential to produce species replacements in trophic guilds. Evidence from other ecosystems presents mixed results about the possible importance of fishing in causing population changes of the fished species' prey, predators, or competitors. Some studies showed a relationship, while others showed that the changes were more likely due to direct environmental influences on the prey, predator, or competitor species rather than a food web effect. Fishing does have the potential to impact food webs but each ecosystem must be examined to determine how important it is for that ecosystem.

Little research has been conducted on the specific trophic interactions of halibut. With trophic interactions and inter-specific competition so poorly understood, it is not possible to clearly specify the effects to the ecosystem of the charter halibut sector. However, given the nature of the action, the presumed effects of the alternatives on the ecosystem are insignificant.

1.8.7 Social and Economic Environment

A description of the charter halibut sector and detailed discussions of the socioeconomic impacts of the alternatives may be found in the RIR in Chapter 7. Chapter 8 contains an IRFA, conducted to evaluate the impacts of the suite of potential alternatives being considered, including the alternatives, on small entities, in accordance with the provisions of the RFA.

1.9 Cumulative Effects

Effects of an action can be direct or indirect. According to the definition in the Council on Environmental Quality (CEQ) regulations (40CFR1500.1) providing guidance on NEPA, direct effects are caused by the action and occur at the same time and place, while indirect effects are those caused by the action and occur later in time or farther removed in distance, but are still reasonably foreseeable. Although the CEQ regulations draw this distinction between direct and indirect effects, legally both must be considered equally in determining significance. In practice, according to "The NEPA Book" (Bass et al. 2001, p. 55),

"the distinction between a reasonably foreseeable effect and a remote and speculative effect is more important than the question of whether an impact is considered direct or indirect."

The alternatives under consideration in this EA are designed to limit halibut harvests in the charter sector to the GHL. Any direct effects or reasonably foreseeable indirect environmental effects from the action would be minor, as explained in the EA. The action itself would not entail changes in stock levels, and any environmental effects, such as the removal of halibut biomass from the ecosystem, are so minor as to make it difficult to reasonably predict further indirect effects of those changes.

Possible future actions currently under consideration by the Council include annual changes to the GHL policy, GHL management measures for Area 2C (final action taken in June 2007) and 3A, limited entry (final action taken in March 2007), and the development of a share-based allocation program to individual charter operators or to the charter sector. ADF&G has implemented regulations in Area 2C in 2006 and 2007 to prohibit retention of crew caught fish and to limit the lines to the number of paying passengers, but not to exceed six lines. ADF&G has implemented regulations in Area 3A in 2007 to prohibit retention of crew caught. The State legislature passed a bill in 2007 to allow the State to share otherwise confidential charter boat data with Federal managers, which would facilitate implementation of the limited entry (moratorium) program and GHL management measures (e.g., annual limit). A delegation of authority to the State to manage halibut is being sought by the State of Alaska.

Cumulative effects are linked to incremental policy changes that individually may have small outcomes, but that in the aggregate and in combination with other factors can result in major resource trends. This action would not interact synergistically with other actions or with natural trends to significantly affect the halibut resource of the Gulf of Alaska. Measures intended to regulate the harvests of halibut under the preferred alternative would supersede current regulations for 2008 and beyond. The nature of future Council actions on allocations, compensated reallocation, permit endorsements and/or share-based systems is speculative. Thus, no reasonably foreseeable future actions would have impacts that would cause significant cumulative effects when combined with the effects from this action.

2.0 REGULATORY IMPACT REVIEW

2.1 Introduction

In April 2007 the Council initiated this analysis of proposed alternatives to set an initial allocation between the charter and commercial IFQ halibut sectors in Area 2C and Area 3A. In June 2007 the Council added proposed market-based alternatives for a compensated reallocation program for future increases in the initial charter allocation.

2.2 Purpose of the Regulatory Impact Review

The preparation of a Regulatory Impact Review (RIR) is required under Presidential Executive Order (E.O.) 12866 (58 FR 51735: October 4, 1993). The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following Statement from the E.O.:

> *In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory options, including the alternative of not regulating. Costs and Benefits shall be understood to include both quantifiable options (to the fullest extent that these can be usefully estimated) and qualitative options of costs and benefits that are difficult to quantify, but nonetheless essential to consider. Further, in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.*

E.O. 12866 requires that the Office of Management and Budget (OMB) review proposed regulatory programs that are considered to be "significant." A "significant regulatory action" is one likely to:

- Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, local or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

The key elements of a RIR include:

- A description of the management objectives (Section 1.2);
- A description of the fishery (Section 2.3);
- A statement of the problem (Section 2.4);
- A description of each selected management option, including the status quo (Section 2.5); and
- An economic analysis of the expected effects of each alternative relative to the baseline (Section 2.6).

This document also includes an analysis of the effect of each alternative management option (Section 2.5), a Regulatory Flexibility Analysis (Section 3.0), and a discussion of other applicable laws (Section 4.0).

2.3 Description of the Fishery

The charter fleet is a fairly homogeneous group with similar operating characteristics and vessel sizes. The exceptions are a few larger, 'headboat' style vessels specializing in overnight experiences or larger vessels specializing in carrying more than a dozen passengers (NPFMC 2005). The number of active vessels in both Area 2C and 3A increased over the last eight years. The total number of trips has also grown to more than 23,000 in both areas in 2006. At the same time, the number of passenger days has increased by approximately 66% in Area 2C and just over 46% in Area 3A.

The commercial IFQ fleet consists of hundreds of vessels of varying size. An April 2007 study by the McDowell Group reported that approximately 670 vessels fished in both Areas 2C and 3A in 2006. There were roughly 1,358 unique quota holders in Area 2C and 1,793 in Area 3A in 2006 and total direct employment in the sector amounted to 2,016 and 2,680 persons respectively.

Table 23 Active Vessels, Trips, and Client Data, 1998-2006

	Area 2C				Area 3A			
Year	Number of "Active" vessels	Total Number of Trips Conducted by "active" vessels	Number of Client Days	Harvest (Mlb)	Number of "Active" vessels	Total Number of Trips Conducted by "active" vessels	Number of Client Days	Harvest (Mlb)
1998	569	15,541	55,922	1.584	503	17,650	94,611	2.985
1999	591	15,700	56,173	0.939	545	19,823	89,449	2.533
2000	634	20,241	72,803	1.132	570	25,180	132,604	3.140
2001	627	18,965	69,222	1.202	560	23,818	132,306	3.132
2002	567	15,085	52,809	1.275	491	18,573	91,092	2.724
2003	590	16,948	59,498	1.412	499	18,592	90,178	3.382
2004	624	19,111	67,803	1.750	532	22,600	116,670	3.668
2005	650	20,248	75,195	1.952	559	22,708	130,716	3.689
2006	696	23,907	92,394	2.035	625	23,427	138,465	3.947

Source: NPFMC (2007b) and NPFMC (2007C)

Table 24 Projected Charter Harvest, 2006-2015 (Mlb)

Measure	Area 2C	Area 3A
Vessels Fished	672	670
Unique Quota Holders	1,358	1,793
Estimated Maximum Number of Skipper and Crew	2,016	2,680

Source: McDowell, 2007.

2.4 Statement of the Problem

The purpose of Action 1 is to set an initial allocation between the charter and commercial IFQ sectors to end the uncompensated reallocation of halibut from the commercial IFQ sector to the charter sector as charter harvests increased over time. The purpose of Action 2 is to develop a mechanism to allow for the compensated reallocation of halibut harvests once the initial allocation has been set. Charter halibut harvests in Areas 2C and 3A have grown to the point where they have exceeded their respective GHLs.

This reallocation results in lower commercial IFQ catch limits and a potential devaluation of the commercial sector QS. Figure 7 shows the growth of charter halibut harvests relative to the GHL.

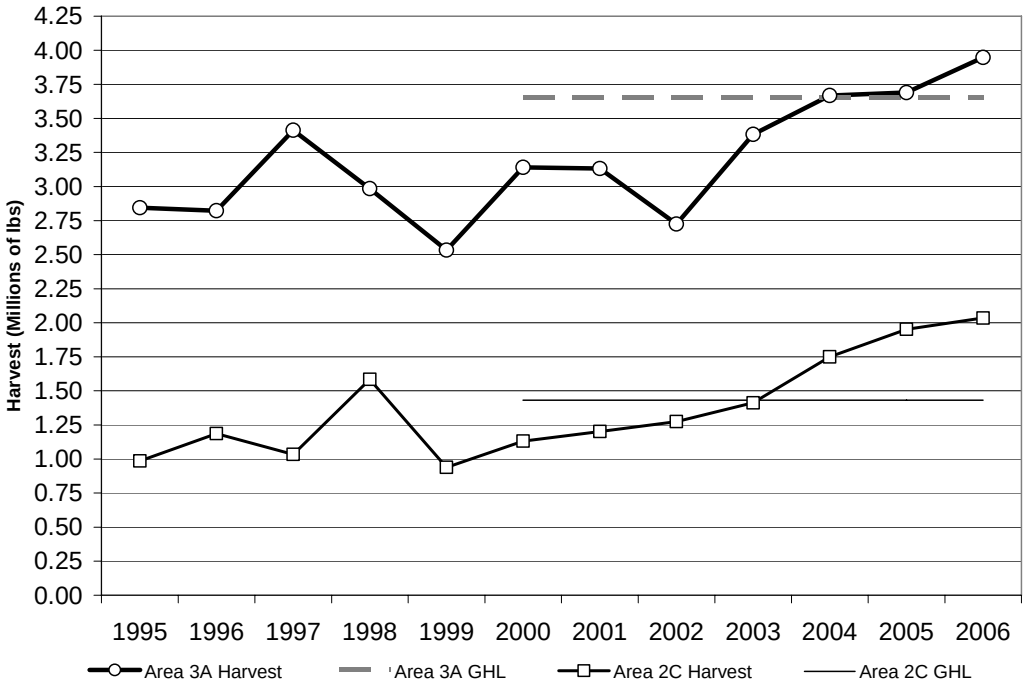

Figure 7 Charter Fleet Halibut Harvests by Year, Area 3A and Area 2C

Source: ADF&G, Statewide Harvest Survey Data 1995-2006, (2007)

NMFS (2007) produced a report that provides detail on the commercial IFQ halibut fishery from 1995 through 2006. Table 14 in that report showing information on the activity of QS holders and hired skippers is provided below.

Table 25 Alaska halibut harvests by QS holder and hired skippers, 1995-2006

Area	Year	QS Holders With Landings	Harvest by QS Holders	QS Holder Harvest % of Total	Hired Skippers With Landings	Harvest by Hired Skipper	Skipper Harvest % of Total	Total Harvest
2C	1995	1,307	7,646,188	99.2	19	62,226	0.8	7,708,414
	1996	1,301	8,323,774	98.8	28	100,644	1.2	8,424,418
	1997	1,253	9,384,833	98.2	32	172,432	1.8	9,557,265
	1998	1,091	9,288,212	97.5	38	240,666	2.5	9,528,878
	1999	1,085	9,604,838	97.9	33	201,679	2.1	9,806,517
	2000	1,078	8,001,485	97.7	37	190,284	2.3	8,191,769
	2001	1,014	7,975,000	97.6	33	195,172	2.4	8,170,172
	2002	1,039	8,233,136	97.6	35	199,235	2.4	8,432,371
	2003	1,031	8,037,313	97.5	36	204,954	2.5	8,242,267
	2004	1,024	9,867,549	97.8	33	219,867	2.2	10,087,416
	2005	988	10,225,876	97.8	29	233,570	2.2	10,459,446
	2006	1001	10,107,047	97.8	33	229061	2.2	10,336,108
3A	1995	1,457	15,214,222	85.7	115	2,532,904	14.3	17,747,126
	1996	1,456	15,462,551	80.1	151	3,842,811	19.9	19,305,362
	1997	1,356	16,671,796	68.9	202	7,513,367	31.1	24,185,163
	1998	1,163	15,943,600	65.0	213	8,575,452	35.0	24,519,052
	1999	1,172	16,160,050	66.7	200	8,063,941	33.3	24,223,991
	2000	1,129	11,596,476	64.3	207	6,447,719	35.7	18,044,195
	2001	1,097	13,267,299	63.0	208	7,804,168	37.0	21,071,467
	2002	1,121	14,691,622	65.1	190	7,865,953	34.9	22,557,575
	2003	1,110	14,389,182	64.6	192	7,888,619	35.4	22,277,801
	2004	1,070	15,484,090	62.9	197	9,115,978	37.1	24,600,068
	2005	1,039	15,225,715	60.8	212	9,825,387	39.2	25,051,102
	2006	1,038	15,048,617	60.3	220	9,897,292	39.7	24,945,909

Source: NMFS RAM 2007 Transfer Report Summary

2.5 Analysis

Since the early 1990s the Council has been developing policy to limit halibut harvests by charter fishermen in order to constrain the erosion of the commercial IFQ fishery harvests. Limiting growth of charter fishing halibut removals is hoped to reduce the tension that exists between commercial halibut fishermen and business operators that provide charter fishing trips for halibut in Areas 2C and 3A. The measures that have been considered by the Council and those that have been implemented by the Secretary are well documented and are summarized in Section 1.3.1.

Management measures that are currently in place or have been approved by the Council but are still under review by the Secretary are not expected to sufficiently limit charter harvests to a level that would maintain a division of halibut between the commercial IFQ sector and the charter sector into the future. Since current management measures will not maintain a division of the available halibut, the Council is considering implementing a hard cap or allocation on the amount of halibut that charter clients would be allowed to harvest annually from Areas 2C and 3A. This is not the first time the Council has considered setting a harvest limit for the charter sector. A division of the halibut available for harvest by the two sectors was contemplated in amendment analyses prior to 2005. Those management measures addressed the open-ended reallocation from the commercial IFQ sector to the charter sector. A division of the available halibut was also considered when the Council approved the halibut charter IFQ program in 2005. That program was rescinded by the Council before the Secretary took action. While a limit on the charter harvests has never been implemented, a GHL that defined a target harvest level for the charter sector has been set at 1.432 Mlb (equivalent to 13%) in Area 2C and 3.65 Mlb (equivalent to 14%) in Area 3A, respectively, since 2004 (NPFMC 2001).

Before the Council began development of these actions, the Council approved a moratorium on new entry into the halibut charter sector. The Council and long time members of the charter sector felt that limiting new entry was an important protection for the existing charter fleet if their sector harvest were to be capped. If the moratorium is not implemented, the charter fleet would compete against other existing

charter operators as well as potential new entrants into the charter sector for the available halibut and charter clients.

If approved by the Secretary, the Council's preferred alternative for would limit the number of vessels that may take clients halibut fishing at any one time and the number of clients each vessel may carry on a trip (NPFMC 2007(a)). A maximum[29] of 689 permits would be issued in Area 2C and 611 permits would be issued in Area 3A. Those numbers represent 35 more permits than vessels that were used to carry clients in Area 2C during 2005. In Area 3A, 44 additional permits could be issued than were fished in 2005. The moratorium analysis acknowledged that charter operators could take more trips with the qualified vessels than taken historically. They also would be allowed to increase the number of clients taken on a trip if the number of clients they carried varied during the client endorsement qualification period. Either of those outcomes would tend to increase the number of clients that fish for halibut in a year. Increases in the number of clients fishing, everything else being equal, would result in additional halibut being harvested by clients in the charter sector.

Continued growth in halibut harvests by charter clients reduces the CEY that is available to the directed commercial halibut fishery. The process used by the IPHC to determine the amount of halibut available for the charter and commercial IFQ fisheries is discussed here to show why increases in charter sector harvests reduce the percentage of the CEY available to the commercial IFQ fishery. Total CEY is currently calculated by applying a fixed harvest rate (22.5 %) to the exploitable biomass estimate. The fishery CEY is calculated by subtracting an estimate of all other non-commercial removals[30] from the Total CEY. The IPHC sets a harvest limit only for commercial fisheries using setline or other hook and line gear. All other halibut removals are accounted for before the fishery CEY is set. It is described in more detail in the EA.

Two general types of management measures have been recently considered that could constrain the growth in halibut harvests. The first type of measure imposes a restriction on when, where or how fishing may occur, limits the number of halibut that a charter client may retain, or limits the size of the halibut that may be retained. Examples are restricting crew harvests, reducing bag limits, and implementing restrictions on the sizes of halibut that could be retained. Limitations on crew harvests are likely to have little impact on a client's willingness to take a charter trip, but are not expected to constrain harvests to a level that is deemed to be appropriate by policy makers (NPFMC 2006b). An action such as reducing the bag limit to one fish is expected to impact some client's willingness to take a trip (NPFMC 2006b). Harvest restrictions that limit the size of the second halibut that may be retained are thought to have less of an impact on a client's willingness to take a trip than reducing the bag limit from two fish to one fish (NPFMC 2006b). These management measures are expected to slow the growth of charter harvests by varying amounts. However, it is difficult to constrain the total charter harvests over time as the sector adapts to the implementation of those measures.

The second type of management measure places a cap on the amount of halibut that the charter sector could harvest in an area during a year, instead of implementing measures that regulate behavioral

[29] Moratorium qualification requirements are based on activity of the business in the year prior to implementation and during the years 2004 or 2005. Because the moratorium analysis could not determine which businesses will fish during the year prior to implementation (or even what year the "year prior to implementation" would be), it estimated the maximum number of permits that could be issued. Over time, the number of permits that are actively being fished should decrease, since about 25% of the permits would be non-transferable because the vessel generating the permit took less than 15 trips in 2004 or 2005.

[30] The non-commercial removals include projected Legal-Sized bycatch harvest, projected Sport Catch, projected Wastage, and projected Personal Use/Subsistence.

changes. Implementing a cap on charter removals also could reduce the necessity for other measures that have been placed on the charter sector. The charter sector may then be allowed to craft measures that would allow them to operate more efficiently under the cap.

An effective program would require that once the charter sector allocation is reached charter operators would be prohibited from allowing clients to retain halibut. This will require the management agencies to notify the fleet when the charter allocation has been reached and that retention is prohibited for the remainder of the year. A specific allocation allows management agencies to have greater precision when setting total allowable removals, but could impose economic impacts on charter businesses if it is unable to book charter trips for other fishing or recreational activities.

In part because of the uncertainties regarding halibut harvests that could result from management measures regulating the number and size of halibut a charter client may harvest, the Council is focusing on placing an allocation, or hard cap, on the total charter harvest of halibut. Along with the allocation, the Council is also considering measures that would allow the charter sector to purchase additional halibut from the commercial IFQ fishery (see Action 2). This increase to the initial allocation would enable the charter sector to grow above the initial allocation, but only if the commercial IFQ sector is compensated for the additional fish. A critical interplay occurs between the Council's preferred alternative for initial allocation under Action 1 and the amount that will need to be supplemented through compensated reallocation under Action 2. **If upon its implementation the initial allocation is not sufficient to allow the charter sector to continue fishing, then either the compensated reallocation program must be implemented simultaneously with the initial allocation (and a reallocation occurs in the first year it is needed), additional management measures would need to be implemented simultaneously with the initial allocation to reduce harvest to the allocation, or the charter fisheries would be closed in-season when the initial allocation is reached.** These issues are explored further under Action 2 and in a separate supplement that will address recordkeeping, implementation, and enforcement issues.

2.5.1 Alternative 2, Action 1 (Sector Allocation)

Option 1: Fixed Percentage Allocation

The Council is considering two basic approaches for setting the initial allocation for the charter sector under Action 1. Option 1 would allocate the charter sector a percentage of the halibut available to the combined charter and commercial sectors. Option 2 would allocate a fixed number of pounds to the charter sector. However, if the suboptions are also selected under Option 2 the charter sector is not allocated a fixed amount of halibut. Instead, the amount it is allocated would change with the CEY, so the outcome is a percentage of the available halibut that varies within the defined steps. Tables that show the allocations under each of these options are provided later in this section.

Option 1: Fixed percentage of combined charter harvest and commercial catch limit for period

	Area 2C	Area 3A
a) 125% of the 1995-1999 avg charter harvest (current GHL formula)	13.1%	14.0%
b) 125% of the 2000-2004 avg charter harvest (GHL formula updated thru 2004)	16.4%	15.8%
c) 125% of the 2001-2005 avg charter harvest (GHL formula updated thru 2005)	17.3%	15.4%
d) Current GHL as a percent of 2004	11.7%	12.7%
e) 2004 charter harvest	14.3%	12.8%
f) 2005 charter harvest	15.1%	12.7%

Option 2: Fixed Pounds

	Area 2C	Area 3A
a) 125% of the 1995-1999 avg charter harvest (current GHL formula)	1.43 Mlb.	3.65 Mlb

b) 125% of the 2000-2004 avg charter harvest (GHL updated thru 2004)	1.69 Mlb.	4.01 Mlb
c) 125% of the 2001-2005 avg charter harvest (GHL updated thru 2005)	1.90 Mlb.	4.15 Mlb

Suboption i: Stair step down: The allocation in each area would be reduced in stepwise increments based on a decrease in the CEY. If the halibut stock were to decrease from 15% to 24% from its average CEY for the selected base period, then the allocation would decrease by 15%. If the stock were to decrease from at least 25% to 34% the allocation would be decreased by an additional 10%. If the stock declines by 10% increments, the allocation would be decline by an additional 10%.

Suboption ii: Stair step down: The allocation in each area would be reduced in stepwise increments based on a increase in the CEY. If the halibut stock were to increase from 15% to 24% from its average CEY for the selected base period, then the allocation would increase by 15%. If the stock were to increase from at least 25% to 34% the allocation would be increased by an additional 10%. If the stock increases by 10% increments, the allocation would be increased by an additional 10%.

The alternatives include options to allocate a percentage of the Fishery CEY or a specific number of pounds to the charter sector. There is also a suboption to allocate a fixed number of pounds of halibut to the charter sector to increase or decrease with fluctuations in the halibut biomass. Because this analysis considers the impacts of each option separately, it is assumed that the Council may select different methods for determining the cap in each area. If one alternative yields a result that is acceptable for one area and a different alternative yields an acceptable result for the other area, the Council would have the latitude to select the option that is best for each area.

The first suite of options would set the allocation to the charter sector as a percentage of a combined charter and commercial IFQ fishery CEY. Five different time periods are currently being considered to determine the allocation. Each time period would result in a slightly different allocation to the charter and IFQ fisheries. The second suite of options would set the charter allocation at a fixed number of pounds. Three options are being considered to determine the fixed number of pounds and include three of the same time periods for the percentage options. Using fixed pounds would insulate the charter sector from fluctuations in halibut biomass that would otherwise cause its allocation to vary. A suboption has been included under the fixed poundage option that would allow the charter allocation to increase or decrease in predefined steps when the total halibut biomass changes by specified amounts. The suboptions do not apply to the options under Option 1 because those allocations are directly linked to changes in biomass. The Option 2 suboptions make it more like Option 1, except that it staggers the linkage between biomass and the initial allocation.

For any of these options to be effective in controlling charter harvest during a year, NMFS and/or the State of Alaska must have the ability to restrict the retention of halibut when the cap is reached. **If retention of halibut cannot be restricted in-season, then the allocation would be ineffective.**

The quality of data available in-season has a direct impact on this decision. *If the data are determined to be insufficient to allow in-season management of the fishery, then the managers could conclude that the program can not be implemented*. Alternatively, the data could be deemed adequate to make estimates of total removals for the area that would allow charter retention to be restricted. Another option would be to modify the programs that collect charter harvest data to allow more precise in-season removal estimates to be made.

The timeliness of the currently ADF&G logbook program could result in need for additional data to be collected. If weekly logbook reports cannot provide sufficient information to limit harvest when the cap is reached, a real-time data collection program will need to be developed. **Staff will continue to work with NMFS and ADF&G to determine the type and level of data collection that is needed to manage the cap. That information has not yet been determined.**

Figure 8 shows the percentage of the combined charter harvest and the commercial IFQ halibut that was caught by the charter sector during the years 1995-2006[31]. The percentage of the total halibut harvested by the charter sector in Area 2C shows no consistent increasing or decreasing trend from 1995-2000. However, from 2001-2006 the charter sector annually increased its percentage of the combined harvest. In Area 3A, the charter sector percentage of the total decreased from 1995-2000. The percentage of the total spiked up in 2000, then it decreased through 2002. The percentage was then fairly stable from 2003-2006.

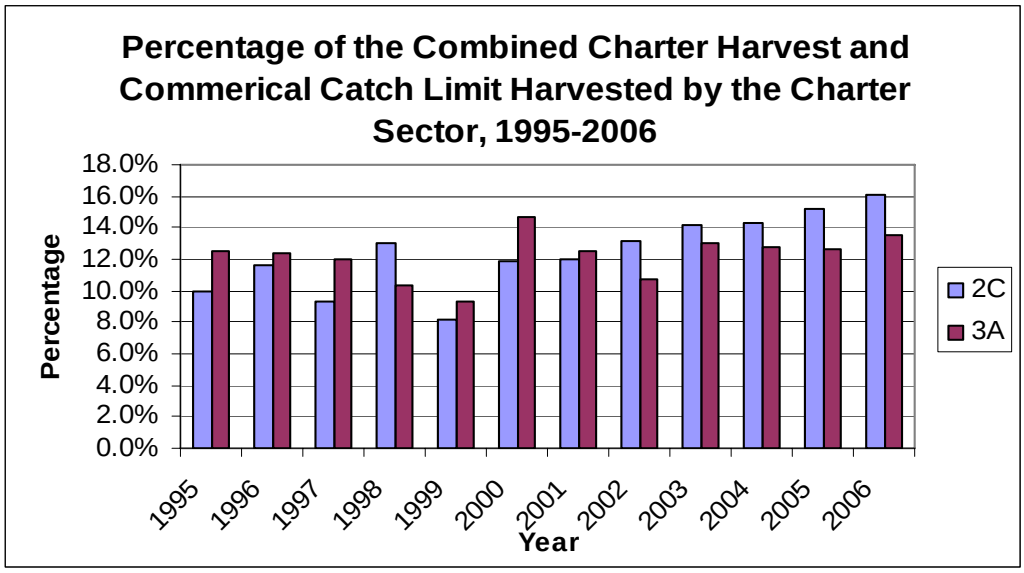

Figure 8 Charter halibut harvest as a percentage of combined commercial IFQ and charter harvest, 1995-2006.

Area 2C The percentages shown in Figure 8 were used to determine the charter allocation percentages that are being considered under Option 1. For Areas 2C and 3A, the annual percentages were averaged to determine the base historic percentage. That percentage was then multiplied by 1.25 to determine the allocation percentage for the charter sector. The percentages that resulted are shown on the right side of the option list. **The Council approved the percentages rounded to the nearest percent. The additional decimal places may provide more definition between the options than was intended. If the Council wishes the options to be rounded to the nearest whole percent in this analysis, the options do not need to be changed but the analysis will be revised in the next draft.**

Table 26 shows estimates of future charter harvests for the years 2006-2015. The harvest estimates are made based on a low charter harvest growth rate and a high charter harvest growth rate. Charter harvest is reported in both millions of pounds and as a percentage of the charter harvest divided by the 2006

[31] 2006 estimates are preliminary

combined charter and commercial harvests. The estimates take into account the proposed management measures that have been approved by the Council. The estimates of charter harvests assume that the charter sector is not capped. The regulations that are designed to slow harvest are included but do not require charter clients to stop fishing when a predefined level of harvest is reached. Those regulatory changes are the primary reasons why the charter harvest is projected to decline from 2006 to 2007.

Table 26 Estimates of charter sector halibut harvest from Areas 2C and 3A, 2006-2015

	2C				3A			
	Charter Catch (Mlb)		% of CEY		Charter Catch (Mlb)		% of CEY	
Year	Low	High	Low	High	Low	High	Low	High
2006	2.04	2.04	20.5%	20.5%	3.95	3.95	13.2%	13.2%
2007	1.62	1.85	16.3%	18.6%	3.64	3.70	12.2%	12.4%
2008	1.46	1.70	14.7%	17.1%	3.75	3.87	12.5%	13.0%
2009	1.56	1.90	15.7%	19.1%	3.86	4.05	12.9%	13.6%
2010	1.66	2.12	16.7%	21.3%	3.98	4.25	13.3%	14.2%
2011	1.78	2.37	17.9%	23.8%	4.10	4.45	13.7%	14.9%
2012	1.90	2.64	19.1%	26.6%	4.22	4.66	14.1%	15.6%
2013	2.03	2.95	20.4%	29.7%	4.35	4.88	14.6%	16.3%
2014	2.16	3.29	21.8%	33.1%	4.48	5.11	15.0%	17.1%
2015	2.31	3.68	23.2%	37.0%	4.61	5.35	15.5%	17.9%

Source: NEI
Note: The percentage of CEY is calculated using the projected harvest as the numerator and the combined 2006 commercial and charter harvests as the denominator.

The charter harvest estimates are then used to compare the charter sector allocations under Option 1(a-f) to the projected harvest amounts. The differences in the resulting percentages (Table 27) represent the gap between its allocation and projected harvest. The shaded cells indicate the years the charter sector is projected to be under its allocation. During those years it would be allowed to operate without modifying its behavior to account for the fishery being shut down prior to the end of the year.

Option 1(a), (d), and (e) are projected to yield an allocation that would not meet the charter sectors harvest demand during any year. The charter sector is projected to exceed its allocation under Option 1(b) starting in 2010 using the low growth rate and every year using the high growth rate. Relative to Option 1(b), the charter sector would have one additional year before it is projected to exceed its allocation at the low growth rate under Option 1(c). It is projected to only be below its allocation in 2008 under the high growth rate. The charter sector is projected to exceed its allocation at the low growth rate in 2008 under Option 1(f).

At 2006 combined charter and commercial halibut harvest amounts, the charter sector harvest is projected to exceed all of the allocations being considered by 2011 under Option 1. Given that the 2007 commercial IFQ fishery CEY in Area 2C is only 60% of the 2006 CEY because of changes to the stock assessment model, it is anticipated that the charter sector would exceed its allocation sooner than is reported in the Area 2C tables in this section of the analysis.

When considering the estimates that are provided in this section, note that the results are dependent on the assumptions used to make the calculations. These are outlined next.

- The growth in charter harvests in 2007-2015 will follow the projections presented in Table 26. If those projections overestimate harvests, then the charter sector could stay under its allocation longer

than reported in Option 1 tables. If the projections are too low, the charter sector could exceed its allocation sooner than reported.

- The total amount of halibut available to the charter and commercial IFQ sectors were assumed to be 9.942 Mlb in Area 2C and 29.85 Mlb in Area 3A. Because the 2007 CEY is smaller than the 2006 CEY in Area 2C, it is anticipated that the estimates for Option 1 would under estimate the years the charter sector remains under their harvest limit. Because the 2007 CEY was larger than 2006, the Area 3A, it may take longer for the charter sector to exceed its allocation than shown in the Option 1 tables. Option 2 would not be affected by the CEY change unless the suboptions are also included.

Table 27 Additional percentage of combined commercial quota and charter harvest in Area 2C that the charter sector would require based on each of the options being considered under Option 1, 2006-2015

	Option 1: Fixed percentage of combined charter harvest and commercial catch limit for reference period											
	% Over Alt. "a"		% Over Alt. "b"		% Over Alt. "c"		% Over Alt. "d"		% Over Alt. "e"		% Over Alt. "f"	
Year	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
2006	7.4%	7.4%	4.0%	4.0%	3.2%	3.2%	8.8%	8.8%	6.2%	6.2%	5.3%	5.3%
2007	3.2%	5.5%	-0.1%	2.1%	-1.0%	1.3%	4.6%	6.9%	2.0%	4.3%	1.2%	3.4%
2008	1.6%	4.0%	-1.8%	0.6%	-2.7%	-0.2%	3.0%	5.4%	0.4%	2.8%	-0.5%	1.9%
2009	2.6%	6.0%	-0.8%	2.6%	-1.7%	1.8%	4.0%	7.4%	1.4%	4.8%	0.5%	3.9%
2010	3.6%	8.2%	0.3%	4.9%	-0.6%	4.0%	5.0%	9.6%	2.4%	7.0%	1.6%	6.2%
2011	4.8%	10.7%	1.4%	7.3%	0.6%	6.5%	6.2%	12.1%	3.6%	9.5%	2.7%	8.6%
2012	6.0%	13.5%	2.6%	10.1%	1.8%	9.3%	7.4%	14.9%	4.8%	12.3%	3.9%	11.4%
2013	7.3%	16.6%	3.9%	13.2%	3.1%	12.4%	8.7%	18.0%	6.1%	15.4%	5.2%	14.5%
2014	8.7%	20.0%	5.3%	16.7%	4.5%	15.8%	10.1%	21.4%	7.5%	18.8%	6.6%	18.0%
2015	10.2%	23.9%	6.8%	20.6%	5.9%	19.7%	11.6%	25.3%	9.0%	22.7%	8.1%	21.9%

Estimates of charter harvests (low and high growth rates) were made by NEI. The total halibut available for both sectors was assumed to be equal to the 2006 amount (9.942 Mlb)

Table 28 shows information similar to Table 27, except the difference between the charter harvest and its allocation is reported in millions of pounds. Reporting the change in pounds provides the reader a method to consider the overages in terms of how the harvest is ultimately assigned to the sector. Charter client harvests in 2006 exceeded the sector proposed allocations under all options. The amount the charter sector exceeded its allocation from 0.31 Mlb under Option 1(c) to 0.87 Mlb over its allocation using Option 1(d). The projected charter harvest starting in 2007 reflects measures approved by the Council to slow charter harvests. Those measures include meeting a halibut size requirement for the retention of a second fish, and are expected to reduce the harvest in 2007 relative to harvests in 2006. Table 28 shows that in 2007 the charter harvest is projected to range from 0.10 Mlb under the proposed charter allocation to 0.68 Mlb over the charter allocation. By 2011, the charter sector is projected to exceed its allocation by 0.14 Mlb to 1.20 Mlb, depending on the selected and the charter growth rate that is applied.

Based on the projections in Table 27 and Table 28, the charter sector would be limited by its allocation as soon as 2007 or as late as 2011, depending on the option. Once the charter sector harvests its entire allocation, it would be required to stop retaining halibut. It would be allowed to retain other species that are legal to harvest and could harvest and release halibut. However, once the allocation is reached charter clients would be prohibited from retaining halibut. Other management measures that are discussed later in this analysis would define a structure that would allow the charter sector to purchase additional halibut from the commercial sector so as to continue retaining halibut. Those options are discussed in detail in Section 2.5.1 and Section 2.5.2.

Table 28 Additional pounds of halibut the charter sector is projected to require in Area 2C based on each of the options being considered under Option 1, 2006-2015

Option 1: Fixed percentage of combined charter harvest and commercial catch limit for reference period												
	Mlb over Alt. "a"		Mlb over Alt. "b"		Mlb over Alt. "c"		Mlb over Alt. "d"		Mlb over Alt. "e"		Mlb over Alt. "f"	
Year	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
2006	0.73	0.73	0.40	0.40	0.31	0.31	0.87	0.87	0.61	0.61	0.53	0.53
2007	0.32	0.54	-0.01	0.21	-0.10	0.12	0.46	0.68	0.20	0.43	0.12	0.34
2008	0.16	0.40	-0.18	0.06	-0.26	-0.02	0.29	0.54	0.04	0.28	-0.05	0.19
2009	0.25	0.59	-0.08	0.26	-0.17	0.17	0.39	0.73	0.14	0.48	0.05	0.39
2010	0.36	0.82	0.03	0.48	-0.06	0.40	0.50	0.96	0.24	0.70	0.16	0.61
2011	0.47	1.06	0.14	0.73	0.05	0.64	0.61	1.20	0.36	0.94	0.27	0.86
2012	0.59	1.34	0.26	1.01	0.17	0.92	0.73	1.48	0.48	1.22	0.39	1.14
2013	0.72	1.65	0.39	1.31	0.30	1.23	0.86	1.79	0.61	1.53	0.52	1.44
2014	0.86	1.99	0.53	1.66	0.44	1.57	1.00	2.13	0.74	1.87	0.66	1.79
2015	1.01	2.38	0.68	2.04	0.59	1.96	1.15	2.52	0.89	2.26	0.81	2.17

Estimates of charter harvests (low and high growth rates) were made by NEI. The total halibut available for both sectors was assumed to be equal to the 2006 amount (9.942 Mlb)

Option 2: Fixed Poundage Allocation

Option 2 would allocate a fixed number of pounds to the charter sector in Areas 2C and 3A. to insulate it from changes in the CEY. All risks associated with changes in the halibut biomass would be borne by the commerical IFQ sector. The commercial IFQ sector would bear the risk because all of the other sectors that harvest halibut have their removals accounted before the commercial IFQ fishery is assigned its allocation.

The charter sector would be allocated the same number of pounds no matter how much the halibut biomass changed, as long as the total CEY would not be exceeded. Because the charter sector allocation would not change, any decreases in the available halibut would result in the commercial sector receiving a smaller percentage of the halibut available for the two sectors. Conversely, any increases in the amount of halibut available to the two sectors would result in the commercial sector being issued a larger percentage of the available halibut.

Table 29 shows the percenatge of the combined commercial and charter harvest that the charter sector would exceed its allocation. As in the previous tables, the shaded cells in Table 29 show the years that the options are projected to be under its allocation. The charter sector is expected to exceed its allocation every year under Option 2(a). The charter sector is projected to exceed its allocation during 2011 under Option 2(b), if the sector has the lower charter growth rate. If the charter growth rate is at the high level, the charter sector would exceed its allocation every year. Option 2(c) gives the charter sector the largest allocation. Because of the larger allocation, it is not projected to exceed its allocation until 2013 under the low growth rate. It is projected to exceed its allocation three years earlier if it has a higher harvest growth rate.

The growth in charter sector harvests is expected to exceed its allocation under all of the options by 2013. Depending on the option selected to set the initial allocation and the charter sector growth in total harvsts, it is projected to exceed its allocation by 4.2% to 22.6% of the combined commercial and charter harvest in 2015. Because it is projected to exceed its allocation, the charter sector would be prohibited from retaining halibut before the charter season would end without a hard cap.

Table 29 Additional percentage of combined commercial quota and charter harvest in Area 2C that the charter sector would require based on each of the options being considered under Option 2, 2006-2015

Option 2: Fixed Pounds						
	% of CEY over alt. "a"		% of CEY over alt. "b"		% of CEY over alt. "c"	
Year	Low	High	Low	High	Low	High
2006	6.1%	6.1%	3.4%	3.4%	1.4%	1.4%
2007	1.9%	4.2%	-0.7%	1.5%	-2.8%	-0.5%
2008	0.2%	2.7%	-2.4%	0.1%	-4.4%	-2.0%
2009	1.2%	4.7%	-1.4%	2.0%	-3.4%	0.0%
2010	2.3%	6.9%	-0.3%	4.3%	-2.4%	2.2%
2011	3.5%	9.4%	0.8%	6.8%	-1.2%	4.7%
2012	4.7%	12.2%	2.0%	9.5%	0.0%	7.5%
2013	6.0%	15.3%	3.4%	12.6%	1.3%	10.6%
2014	7.4%	18.7%	4.7%	16.1%	2.7%	14.0%
2015	8.8%	22.6%	6.2%	20.0%	4.2%	17.9%

Notes: Estimates of charter harvests (low and high growth rates) were made by NEI. The total halibut available for both sectors was assumed to be equal to the 2006 amount (9.942 Mlb).

Table 30 shows the number of pounds the charter sector is projected to exceed potential allocations under Option 2 from 2006-2015. Recall from the list of options that in Area 2C the charter sector would be allocated 1.43 Mlb, 1.69 Mlb, or 1.90 Mlb under Option 2(a), (b), or (c), respectively. Option 2(a) is projected to result in the charter sector exceeding its allocation every year. Using the low growth rate, it would only exceed its allocation by 0.02 Mlb in 2008, and by 2015, it is projected to exceed its allocation by 0.88 Mlb. Under the high growth rate it is projected to exceed its allocation by 0.27 Mlb in 2008 and 2.25 Mlb in 2015. Under Option 2(c) with the lower growth rate, the largest charter allocation of the three options, the sector is projected to be under its cap until 2012. It is projected to exceed its allocation by 0.13 Mlb in 2013 and the overage is projected to increase annually and reach 0.41 Mlb in 2015.

Table 30 Additional pounds of halibut the charter sector is projected to require in Area 2C based on each of the options being considered under Option 2, 2006-2015

Option 2: Fixed Pounds						
	Mlb over alt. "a"		Mlb over alt. "b"		Mlb over alt. "c"	
Year	Low	High	Low	High	Low	High
2006	0.60	0.60	0.34	0.34	0.14	0.14
2007	0.19	0.41	(0.07)	0.15	(0.28)	(0.05)
2008	0.02	0.27	(0.24)	0.01	(0.44)	(0.20)
2009	0.12	0.46	(0.14)	0.20	(0.34)	(0.00)
2010	0.23	0.69	(0.03)	0.43	(0.24)	0.22
2011	0.34	0.93	0.08	0.67	(0.12)	0.47
2012	0.46	1.21	0.20	0.95	(0.00)	0.74
2013	0.59	1.52	0.33	1.26	0.13	1.05
2014	0.73	1.86	0.47	1.60	0.27	1.40
2015	0.88	2.25	0.62	1.99	0.41	1.78

Estimates of charter harvests (low and high growth rates) were made by NEI. The total halibut available for both sectors was assumed to be equal to the 2006 amount (9.942 Mlb).

Area 3A The same options under consideration for Area 2C are also being considered for Area 3A. Because they are being analyzed separately for each area, the Council has the flexibility to select different options for each area. Given that the charter harvest growth rates and CEYs for the two areas do not track together, it may be appropriate to select different options for the two areas. However, if the Council

selects its preferred options based on a common policy, the public may expect a uniform approach to Council decision making.

Table 31 reports the percentage of the total halibut available (29.85 Mlb in 2006) to the Area 3A charter and commercial IFQ fisheries, that the charter sector is projected to exceed its allocation. Recall that the charter sector allocation is estimated to be 14.0%, 15.8%, 15.4%, 12.7%, 12.8%, and 12.7% of the total available to the charter and commercial sector under Option 1(a-f), respectively. Using Option 1(a) as an example, during the 2008 fishing year the charter sector is projected to be 1.5% of 29.85 Mlb under its allocation. Recall that the analysis provides of low and high projections of charter sector harvests for the years 2006-2015 (Table 26).

The information reported in Table 31 shows that the charter sector is projected to be under its allocation under Option 1(a) at the low harvest level through 2011. The charter sector is projected to exceed its cap from 2012 through 2015. At the high charter harvest projections, the sector would exceed its allocation starting in 2010. Option 1(b) and 1(c) result in fairly similar outcomes. Option 1(b) is projected to allow the charter sector to remain under its allocation every year under the low growth rate. Under the high growth rate the charter sector is projected to exceed its allocation in 2013. Option 1(c) is projected to result in the charter sector slightly exceeding its allocation in 2015 under the low charter harvest, and exceeding its allocation starting in 2012 with a high growth rate. The projections for Options 1(d-f) would have the charter sector exceeding its allocation by 2008 or 2009, depending on the option selected.

When the charter sector allocation is exceeded, its clients would be required to stop retaining halibut. Therefore, the years when the charter sector harvests exceed its allocation, it would be required to alter the types or numbers of trips it can offer clients. The impacts of reaching its allocation are discussed in greater detail in other sections of this analysis.

Table 31 Additional percentage of combined commercial quota and charter harvest in Area 3A that the charter sector would require based on each of the options being considered under Option1, 2006-2015

Option 1: Fixed percentage of combined charter harvest and commercial catch limit for reference period												
	% Over Alt. "a"		% Over Alt. "b"		% Over Alt. "c"		% Over Alt. "d"		% Over Alt. "e"		% Over Alt. "f"	
Year	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
2006	-0.8%	-0.8%	-2.6%	-2.6%	-2.2%	-2.2%	0.5%	0.5%	0.4%	0.4%	0.6%	0.6%
2007	-1.8%	-1.6%	-3.7%	-3.5%	-3.3%	-3.1%	-0.5%	-0.3%	-0.6%	-0.4%	-0.5%	-0.3%
2008	-1.5%	-1.0%	-3.3%	-2.9%	-2.9%	-2.5%	-0.2%	0.3%	-0.2%	0.2%	-0.1%	0.3%
2009	-1.1%	-0.4%	-2.9%	-2.3%	-2.5%	-1.9%	0.2%	0.9%	0.2%	0.8%	0.3%	0.9%
2010	-0.7%	0.2%	-2.5%	-1.6%	-2.1%	-1.2%	0.6%	1.5%	0.5%	1.5%	0.7%	1.6%
2011	-0.3%	0.9%	-2.1%	-0.9%	-1.7%	-0.5%	1.0%	2.2%	0.9%	2.1%	1.1%	2.2%
2012	0.1%	1.6%	-1.7%	-0.2%	-1.3%	0.2%	1.4%	2.9%	1.4%	2.8%	1.5%	2.9%
2013	0.6%	2.3%	-1.3%	0.5%	-0.9%	0.9%	1.9%	3.6%	1.8%	3.6%	1.9%	3.7%
2014	1.0%	3.1%	-0.8%	1.3%	-0.4%	1.7%	2.3%	4.4%	2.2%	4.3%	2.3%	4.5%
2015	1.5%	3.9%	-0.4%	2.1%	0.0%	2.5%	2.7%	5.2%	2.7%	5.2%	2.8%	5.3%

Estimates of charter harvests (low and high growth rates) were made by NEI. The total halibut available for both sectors was assumed to be equal to the 2006 amount (29.85 Mlb)

Table 32 converts the percentages from Table 31 into millions of pounds, so the years that the charter sector is projected to exceed its allocation are the same in both tables. Assuming that the predicted growth in the charter sector is true and the halibut available to both the charter sector and commercial sector is 29.85 Mlb, in 2007 the charter sector is projected to be between 0.08 Mlb to 1.09 Mlb under its allocation. By 2015 the charter sector could exceed its allocation by as much as 1.57 Mlb or remain under its allocation, based on the assumptions and projections used to develop the tables.

Table 32 Additional pounds of halibut the charter sector is projected to require in IPHC Area 3A based on each of the options being considered under Option 1, 2006-2015

Option 1: Fixed percentage of combined charter harvest and commercial catch limit for reference period												
	Mlb over Alt. "a"		Mlb over Alt. "b"		Mlb over Alt. "c"		Mlb over Alt. "d"		Mlb over Alt. "e"		Mlb over Alt. "f"	
Year	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
2006	(0.23)	(0.23)	(0.78)	(0.78)	(0.66)	(0.66)	0.15	0.15	0.13	0.13	0.17	0.17
2007	(0.54)	(0.48)	(1.09)	(1.03)	(0.98)	(0.91)	(0.16)	(0.10)	(0.18)	(0.12)	(0.14)	(0.08)
2008	(0.43)	(0.31)	(0.98)	(0.86)	(0.87)	(0.74)	(0.05)	0.08	(0.07)	0.06	(0.03)	0.09
2009	(0.32)	(0.13)	(0.87)	(0.67)	(0.75)	(0.56)	0.07	0.26	0.04	0.24	0.08	0.28
2010	(0.20)	0.07	(0.75)	(0.48)	(0.64)	(0.36)	0.18	0.45	0.16	0.43	0.20	0.47
2011	(0.08)	0.27	(0.63)	(0.28)	(0.52)	(0.16)	0.30	0.65	0.28	0.63	0.32	0.67
2012	0.04	0.48	(0.51)	(0.07)	(0.39)	0.05	0.43	0.86	0.41	0.84	0.44	0.88
2013	0.17	0.70	(0.38)	0.15	(0.26)	0.27	0.55	1.09	0.53	1.06	0.57	1.10
2014	0.30	0.93	(0.25)	0.38	(0.13)	0.50	0.68	1.32	0.66	1.30	0.70	1.33
2015	0.43	1.17	(0.12)	0.62	0.00	0.74	0.82	1.56	0.80	1.54	0.84	1.57

Estimates of charter harvests (low and high growth rates) were made by NEI. The total halibut available for both sectors was assumed to be equal to the 2006 amount (29.85 Mlb)

As discussed for Area 2C, Option 2(a-c) would allocate the charter sector a specific number of pounds of halibut. The charter sector would be allocated 3.65 Mlb, 4.01 Mlb, or 4.15 Mlb in Area 3A under options (a), (b), or (c), respectively.

The charter sector is projected to increase its harvest by 0.4% over the 2006 combined harvest each year from 2008 forward under the low growth rate. The high growth rate is projected to increase charter harvest by about 0.7% annually from 2008 forward.

Table 33 indicates that under Option 2(a) the charter sector is projected to exceed its allocation every year, except under the low charter harvest rate in 2007. That year the charter sector is projected to be slightly under their intital allocation (by less than 13,000 pounds). Given that the estimates of future harvest are expected to differ from the actual harvest, it is possible that the charter sector would exceed its allocation that year.

Option 2(b) would allocate about 140,000 pounds less to the charter sector than Option 2(c). Because the allocation amounts are similar, the impacts of options (b) and (c) will follow the same trend. For example, under the low growth rate the charter sector is projected to increase its harvest by about 160,000 pounds each year. The high growth rate increases the charter catach by more than 280,000 pounds. Therefore, the increased allocation under Option 2(c) would be exceeded by one additional year of growth in the charter harvest under either growth rate.

Depending on the option seclected, the charter sector is projected to be between 1.6% and 5.7% of the available halibut over its allocation by 2015. During the portion of fishing year that the charter sector is over its allocation, charter clients would be prohibiuted from retaining any halibut. Other species that are caught could be retained if no regulations are in place that restrict their retention.

Table 33 Additional percentage of combined commercial quota and charter harvest in Area 3A that the charter sector would require based on each of the options being considered under Option 2, 2006-2015

Option 2: Fixed Pounds						
	% of CEY over alt. "a"		% of CEY over alt."b"		% of CEY over alt. "c"	
Year	Low	High	Low	High	Low	High
2006	1.0%	1.0%	-0.2%	-0.2%	-0.7%	-0.7%
2007	0.0%	0.2%	-1.3%	-1.1%	-1.7%	-1.5%
2008	0.3%	0.7%	-0.9%	-0.5%	-1.3%	-0.9%
2009	0.7%	1.4%	-0.5%	0.1%	-1.0%	-0.3%
2010	1.1%	2.0%	-0.1%	0.8%	-0.6%	0.3%
2011	1.5%	2.7%	0.3%	1.5%	-0.2%	1.0%
2012	1.9%	3.4%	0.7%	2.2%	0.2%	1.7%
2013	2.3%	4.1%	1.1%	2.9%	0.7%	2.4%
2014	2.8%	4.9%	1.6%	3.7%	1.1%	3.2%
2015	3.2%	5.7%	2.0%	4.5%	1.6%	4.0%

Estimates of charter harvests (low and high growth rates) were made by NEI. The total halibut available for both sectors was assumed to be equal to the 2006 amount (29.85 Mlb)

Table 34 converts the percentages from Table 33 to millions of pounds using the 29.85 Mlb combined halibut harvest in 2006. This table was included to provide the reader a more tangible estimate of how close the charter sector is projected to be to its allocation under the three options that allocate a fixed number of pounds. Since the pounds of halibut allocated to the charter sector is fixed, the change in the amount of halibut the charter sector is under or over its allocation, within a single option, is due to the change in projected charter harvest.

Under Option 2(a), the charter sector is projected to exceed its allocation by 0.10 Mlb to 0.22 Mlb in 2008. Because of the projected growth in the charter harvest, the overage is projected to increase from 0.97 Mlb to 1.70 Mlb during 2015. The allocation under options (b) and (c) is larger than under Option 2(a), so it is under its allocation for more years.

Table 34 Additional pounds of halibut the charter sector is projected to require in IPHC Area 3A based on each of the options being considered under Option 2, 2006-2015

Option 2: Fixed Pounds						
	Mlb over Alt. "a"		Mlb over Alt. "b"		Mlb over Alt. "c"	
Year	Low	High	Low	High	Low	High
2006	0.30	0.30	(0.06)	(0.06)	(0.20)	(0.20)
2007	(0.01)	0.05	(0.38)	(0.31)	(0.51)	(0.45)
2008	0.10	0.22	(0.27)	(0.14)	(0.40)	(0.28)
2009	0.21	0.41	(0.15)	0.04	(0.29)	(0.09)
2010	0.33	0.60	(0.03)	0.24	(0.17)	0.10
2011	0.45	0.80	0.09	0.44	(0.05)	0.30
2012	0.57	1.01	0.21	0.65	0.07	0.51
2013	0.70	1.23	0.34	0.87	0.20	0.73
2014	0.83	1.46	0.47	1.10	0.33	0.96
2015	0.97	1.70	0.60	1.34	0.47	1.20

Estimates of charter harvests (low and high growth rates) were made by NEI. The total halibut available for both sectors was assumed to be equal to the 2006 amount (29.85 Mlb)

Suboptions: Two suboptions are being considered that would alter the pounds of halibut allocated to the charter sector if the CEY changes from the base period by a predefined percentage. CEYs for Areas 2C

and 3A are reported in Table 35 for the years 1995 – 2006. Those CEYs were used when calculating the base period. These suboptions are intended to make the charter allocations sensitive to changes in halibut biomass, similar but not equal to the sensitivity that would occur in a direct relationship with halibut biomass under Option 1.

Table 35 Area 2C and 3A CEYs in Mlb, 1995-2007

Year	2C	3A
1995	13.94	31.16
1996	13.94	31.16
1997	13.92	40.66
1998	17.70	45.44
1999	12.80	31.80
2000	8.44	18.98
2001	11.20	27.80
2002	10.66	30.96
2003	12.00	40.00
2004	20.00	36.50
2005	14.90	32.90
2006	13.73	32.18
2007	10.80	35.78

Source: IPHC data

The CEYs in Table 35 are the historic CEYs calculated and used in those years. The IPHC is considering using a coast-wide assessment method instead of a closed-area assessment. The effects of migration on the closed-area model, used historically, tend to overestimate the halibut in Area 2C and under-estimate the halibut in Area 3A (Clark and Hare 2006). Changing the assessment method to a coast-wide model could result in the Area 2C GHL step-down being triggered in 2008 because of the new CEY calculation method, and not changes in the underlying biomass. IPHC staff reported that they do not think the trigger will occur in 2008, but this is not certain. Conversely, the 3A CEY could increase and trigger a step-up because of how the CEY is calculated and not the underlying biomass.

Because the method of calculating the CEY could result in allocation changes under these suboptions, it is important the Council state its intent regarding which CEYs should be used to calculate the historic average for the three time periods being considered. If the historic CEYs are used, the information in the following tables shows the future CEYs that would trigger a change in the allocation. Alternatively, the Council could request that CEYs be recalculated using the coast-wide method, if the IPHC implements that approach to calculate the CEY. If the historic CEYs are updated, the tables will need to be revised to reflect the new historic average CEY.

Once the base period is defined, future CEYs can be compared to the base CEY to determine whether the CEY has changed the required amount. If the baseline average CEY has changed the specified amount, the charter sector allocation would be increased or decreased by the percentages listed in suboptions (i) or (ii).

Table 36 reports the average baseline CEY for the three options that would allocated the charter sector a "fixed" number of pounds. Option a uses the average CEY from 1995-1999 to determine the baseline CEY. Option (b) and (c) use the average CEYs from the years 2000-2004 and 2001-2005, respectively. Using the annual CEYs reported in Table 35 to calculate the average baseline CEYs, yields an average CEY of 11.80 Mlb under Option (a), 11.72 Mlb under Option b, and 12.40 Mlb under Option (c).

Based on the average baseline CEYs defined in the suboptions and the required percentage changes from the baseline defined in the suboptions, the future CEYs that would trigger changes in the charter sector allocation are reported in the left half of Table 36. Note that any CEY that is between 85% and 115% of the baseline CEY would not result in a change in the charter allocation. CEY changes that are more than 15% of the baseline CEY would result in a change in the allocation. For example, if the CEY is 85% (the actual range is 85% to 75.01% to trigger a 15% reduction) of the average baseline CEY, the Area 2C allocation would be reduced by 15%. Under Option 2(a), a CEY from 8.86 Mlb to 10.03 Mlb would result in an allocation of 1.22 Mlb. Given the initial allocation was 1.432 Mlb, that equates to a 0.21 Mlb (15%) reduction from the initial allocation. If the CEY declined dramatically in the future, the charter sector allocation would also decline by a substantial amount. For example if the CEY declined to 25% of its baseline amount (2.95, 2.93, or 3.10 Mlb under options (a), (b), and (c), respectively), the allocation to the charter sector would be reduced to 0.36, 0.42, or 0.47 Mlb under options (a), (b), and (c), respectively. On the other hand, an increase in the CEY from the average baseline amount would increase the charter sector allocation. For example, if the CEY was increased to 145% of the average baseline amount (17.11, 16.99, or 17.97 Mlb under options (a), (b), and (c), respectively) the charter sector allocation would increase 45% above the initial allocation. A 45% increase under Option 2(a) results in an allocation to the charter sector of 2.08 Mlb.

At the points where the CEY changes from the baseline trigger a 10% change in the charter sector allocation, the charter sector would either gain or lose about 0.14 Mlb, 0.17 Mlb, or 0.19 Mlb under Option 2(a-c), respectively. Therefore, if the CEY changed from 125% to 135% from the average baseline amount, that would equate to 1.18 Mlb and would change the charter sector allocation by 0.14 Mlb, under Option 2(a). Under Option 2(b), that percentage change from the average baseline CEY would change the charter sector allocation by 0.17 Mlb. Finally, that percentage change under Option 2(c) would require a 1.24 Mlb change in the CEY and result in an increase of 0.19 Mlb in the charter allocation.

The discussion above shows that including the suboptions as part of Option 2 results in the charter sector allocations more closely resembling an allocation based on a percentage of the CEY than a fixed number of pounds, but is somewhat of a hybrid of the two options. If the percentage of the CEY allocated to the charter sector is calculated at the breakpoint where the charter sector allocation would change, the charter sector would be allocated 12.14% 14.45%, and 15.21% of the CEY under Option 2(a), (b), and (c), respectively. However, if the charter sector percentage of the CEY is calculated just before a breakpoint is reached, then the charter sector would be allocated from 100% of the CEY at very small CEY levels to close the breakpoint levels at very large CEYs. When the CEYs range from 15% to 195% of the average baseline amounts, the largest percentage of the CEY the charter sector could be allocated under Option 2(a) would be from 20.12% to 12.79% of the CEY as breakpoints are approached. They would be allocated 12.14% when they where exactly at the breakpoint. The charter sector percentage of the CEY under Option 2(b) would range from 15.22% to 23.94% as the CEY approached to allocation breakpoints. Based on Option 2(c), the charter sector would be allocated 16.13% to 25.38% of the CEY as they approached the allocation breakpoints between 15% and 195% of the average baseline CEY.

Table 36 Hypothetical changes in Area 2C CEYs and the impact the changes would have on the charter sector annual allocation.

	1995-1999	2000-2004	2001-2005	1995-1999	2000-2004	2001-2005
	Avgerage CEY (Mlb)			Initial Allocation (Mlb)		
	11.80	11.72	12.40	1.43	1.69	1.90
Percentage of Average CEY	Future CEY levels that would trigger a change in charter allocation (Mlb)			New Allocation Resulting from Change in CEY (Mlb)		
0% - 15%	1.77	1.76	1.86	0.21	0.25	0.28
15.01% - 25%	2.95	2.93	3.10	0.36	0.42	0.47
25.01% - 35%	4.13	4.10	4.34	0.50	0.59	0.66
35.01% - 45%	5.31	5.27	5.58	0.64	0.76	0.85
45.01% - 55%	6.49	6.44	6.82	0.79	0.93	1.04
55.01% - 65%	7.67	7.62	8.06	0.93	1.10	1.23
65.01% - 75%	8.85	8.79	9.30	1.07	1.27	1.42
75.01% - 85%	10.03	9.96	10.54	1.22	1.44	1.61
85.01% -114.99%				1.43	1.69	1.90
115% - 124.99%	13.57	13.47	14.26	1.65	1.95	2.18
125% - 134.99%	14.75	14.65	15.50	1.79	2.12	2.37
135% - 144.99%	15.93	15.82	16.73	1.93	2.28	2.56
145% - 154.99%	17.11	16.99	17.97	2.08	2.45	2.75
155% - 164.99%	18.29	18.16	19.21	2.22	2.62	2.94
165% - 174.99%	19.47	19.33	20.45	2.36	2.79	3.13
175% - 184.99%	20.65	20.50	21.69	2.51	2.96	3.32
185% - 194.99%	21.83	21.67	22.93	2.65	3.13	3.51
195% - 204.99%	23.01	22.85	24.17	2.79	3.30	3.70

Source: Annual CEY data.

For Area 3A the average baseline CEYs were calculated to be 30.70 Mlb under Option 2(a), 30.34 Mlb under Option 2(b), and 32.00 Mlb under Option 2(c). Those CEY amounts are used as the baseline to determine if the CEY has changed a sufficient amount to trigger an adjustment in the charter sector allocation. Table 37 reports the CEY levels that would result in a change in the charter sector allocation and the allocation in millions of pounds. This information is presented in the same way as in Table 36 for Area 2C. The information in the far-left side column shows the percentage of the average baseline CEY. The second, third, and fourth columns show the future CEY levels that would trigger the change in the charter sector allocation. Finally, the three columns on the right hand side of the table show the allocation that the charter sector would be issued. The initial allocation, under Option 2(a), would be 3.65 Mlb. It would be adjusted downward in a stepwise fashion to a minimum of 0.55 Mlb, if the CEY dropped to 15% (4.61 Mlb) of the 30.70 Mlb baseline CEY. If the CEY increased, the charter sector allocation would increase in a stepwise fashion using the percentages listed in the first column. The charter sector allocation would increase at approximately 0.37 Mlb, 0.40 Mlb, 0.41 Mlb increments, under Option 2(a), (b), and (c), respectively, when the CEY increases in 10% increments. Using Option 2(a) as an example, the charter sector allocation would increase from 4.19 Mlb to 4.56 Mlb when the percentage of the average CEY increases from 115% to 125%. That equates to a 0.37 Mlb increase. If the CEY increased from 175% above the baseline average to 185%, then the allocation would increase from 6.38 Mlb to 6.75 Mlb. That equates to a 0.37 Mlb increase. Under Option 2(b), the charter sector allocation would increase by 0.40 Mlb when the CEY increases from 115% to 125% of the baseline average.

The allocation would continue to increase at 10% intervals if the CEY exceeded 205% of the average baseline CEY. Because the charter sector allocation increases about 0.37 Mlb, 0.40 Mlb, and 0.41 Mlb,

under options (a), (b), and (c), respectively, for each 10% increase above the average baseline, larger CEY increases than are shown in Table 37 can be estimated relatively easily.

Table 37 Hypothetical changes in Area 3A CEYs and the impact the changes would have on the charter sector annual allocation

	1995-1999	2000-2004	2001-2005	1995-1999	2000-2004	2001-2005
	Average CEY (Mlb)			Initial Allocation (Mlb)		
	30.70	30.34	32.00	3.65	4.01	4.15
Percentage of Average CEY	Future CEY levels that would trigger a change in charter allocation (Mlb)			New Allocation Resulting from Change in CEY (Mlb)		
0% - 15%	4.61	4.55	4.80	0.55	0.60	0.62
15.01% - 25%	7.68	7.59	8.00	0.91	1.00	1.04
25.01% - 35%	10.75	10.62	11.20	1.28	1.40	1.45
35.01% - 45%	13.82	13.65	14.40	1.64	1.80	1.87
45.01% - 55%	16.89	16.69	17.60	2.01	2.21	2.28
55.01% - 65%	19.96	19.72	20.80	2.37	2.61	2.70
65.01% - 75%	23.03	22.76	24.00	2.74	3.01	3.11
75.01% - 85%	26.10	25.79	27.20	3.10	3.41	3.53
85.01% -114.99%				3.65	4.01	4.15
115% - 124.99%	35.31	34.89	36.80	4.19	4.61	4.77
125% - 134.99%	38.38	37.93	40.00	4.56	5.01	5.18
135% - 144.99%	41.45	40.96	43.20	4.92	5.41	5.60
145% - 154.99%	44.52	44.00	46.40	5.29	5.81	6.01
155% - 164.99%	47.59	47.03	49.60	5.65	6.22	6.43
165% - 174.99%	50.66	50.06	52.80	6.02	6.62	6.84
175% - 184.99%	53.73	53.10	56.00	6.38	7.02	7.26
185% - 194.99%	56.80	56.13	59.20	6.75	7.42	7.67
195% - 204.99%	59.87	59.17	62.40	7.11	7.82	8.09

Source: Annual CEY data.

Based on the annual CEYs reported in Table 35 the average CEYs for years selected for Option 2(a), (b), and (c) were calculated and reported in Table 38. The average CEY is then compared to the 2007 CEY to show the percentage change between the two. That change is then used to determine the adjustment in the initial allocation. For Area 2C, the 2007 CEY was between 87% and 92% of the average CEY for each option. That level of change from the initial CEY would not reduce the initial 2C allocation.

In Area 3A, the 2007 CEY is larger than the historic averages being considered. Because the CEY increase is less than 15% more than the historic average from Option 2(c), the charter sector would receive 100% of its initial allocation. The CEY increase under Option 2(a) and (b) is between 15% and 25% above the historic average so the charter sector would be allocated 115% of their initial allocation. Decreasing the charter sectors allocation would decrease the amount of halibut that would be available to the IFQ holders in the commercial sector by about 0.6 Mlb relative to the fixed poundage allocation.

In Area 3A, the charter sector allocation would be increased by 15% under Option 2(b). Its allocation would not charge under either of the other options. Therefore, the charter sector allocation would be 3.65 Mlb under Option 2(a), 4.61 Mlb using Option 2(b), or 4.15 Mlb using Option 2(c).

Table 38 Average CEYs (Mlb) in Areas 2C and 3A over the years considered under Option 2, options (a), (b), and (c)

Option 2	Years	Avg CEY	2007 CEY/Avg CEY	Initial Allocation (Mlbs)	Revised Allocation (Mlbs)	% of Initial Allocation
			2C			
a	1995-1999	11.80	91.5%	1.43	1.43	100%
b	2000-2004	11.72	92.2%	1.69	1.69	100%
c	2001-2005	12.40	87.1%	1.90	1.90	100%
			3A			
a	1995-1999	30.70	116.5%	3.65	4.19	115%
b	2000-2004	30.34	117.9%	4.01	4.61	115%
c	2001-2005	32.00	111.8%	4.15	4.15	100%

Source: IPHC data
Note: The CEY in Area 2C in 2007 was 10.80 Mlb, according to the IPHC Staff. The Area 3A CEY was 35.78 Mlb.

2.5.2 Alternative 2, Action 2 (Compensated Reallocation)

Action 2 Alternative 2 contains two options that allow compensated reallocation shifts between the halibut commercial and charter sectors to occur. The options are the development of a common pool management system and the development of an individual private management system.

Developing a mechanism to provide for compensated shifts in allocation is a foundation for establishing initial allocations and final management strategies. This section discusses each option and element while identifying practical steps required to pursue each option, and briefly discusses potential benefits as well as legal and practical problems associated with each option.

Because management of halibut is under the Halibut Act, the common pool options will require legislative changes, with risks inherent in the legislative process. Legislation is subject to revision as it moves through the legislative process and a bill that finally passes may be very different from what is originally proposed. Additionally, in considering whether to pursue a legislative route, it is important to recognize that legislators represent a number of areas and constituencies, some of whose priorities may not be consistent with the best interests of either commercial or charter fishermen (Commercial Fisheries Entry Commission 1998).

In December 1991, the Council adopted a limited access system for managing the halibut fishery in and off Alaska under authority of the Halibut Act. This limited access system included an IFQ Program for Areas 2C through 4D, and the CDQ program for Areas 4B through 4E. The Council designed the IFQ and CDQ programs to allocate specific harvesting privileges among U.S. fishermen and eligible western Alaska communities to resolve management and conservation problems associated with "open access" fishery management, and to promote the development of fishery-based economic opportunities in western Alaska. Acting on behalf of the Secretary, NMFS initially implemented the IFQ and CDQ programs through regulations published in the Federal Register on November 9, 1993 (58 FR 59375). Fishing for halibut under these two programs began on March 15, 1995.

The IFQ program has two types of limited access permits (LAPs). The first type is Quota Share (Access) permits. These are continuous LAPs allowing access to the fishery. A QS permit is identified by species, area, vessel category, and whether blocked or unblocked. The second type is Individual Fishing Quota (Allocation) permits. These are seasonal LAPs that annually allocate the amount of fish each Access permit holder may catch that season.

An person's QS are transformed each year into IFQ by first finding their percentage of the quota share pool (QSP), which is the sum of all QS units issued. Their percentage is then multiplied by the annual total allowable catch (TAC) set for the halibut fishery in each regulatory area. Mathematically, the amount that a QS holder may harvest in an area in any given year is given by:

$$IFQ = (QS/QSP) \times TAC$$

The resulting IFQ number may be adjusted (up or down) depending on fishing activities in the previous season. IFQ must be harvested in the registration area and from the vessel size category for which it is issued.

With specific regard to holding limited access privileges in the Alaska fixed gear commercial halibut fishery, current Federal regulations (50 CFR 679.41) allow only a person who is a U.S. citizen or U.S. corporation, partnership, association, or other entity to receive halibut QS/IFQ by transfer. No additional qualifications must be met for a person or entity to hold halibut QS assigned to Category A vessels. However, the amount of Category A QS represents only 2.1% of the total halibut QS in Area 2C, and 2.6% of the total halibut QS in Area 3A (Table 39). Moreover, holders of Category A QS seldom sell their shares, preferring instead to lease them.

Table 39 Distribution of Vessel Categories of Halibut Quota Share in IFQ Regulatory Areas 2C and 3A[1]

Area	Total QS Units	Vessel Category A QS Units (Number)	Vessel Category A QS Units (Percent)	Vessel Category B, C, or D QS Units (Number)	Vessel Category B, C, or D QS Units (Percent)
2C	59,552,039	1,249,141	2.1	58,302,898	97.9
3A	184,911,315	4,773,918	2.6	180,137,397	97.4

[1]The vessel categories are defined as follows: Class A = freezer vessel of any length; Class B = catcher vessel greater than 60 feet in length; Class C = catcher vessel between 60 and 35 feet in length; Class D = catcher vessel less than 35 feet in length.

To hold other vessel categories of halibut QS, i.e., halibut QS assigned to vessel Categories B, C, or D, current restrictions require a person or entity to be:

- An initial issuee of halibut and sablefish fixed gear fishery QS;
- A solely-owned corporation formed by an individual initial issuee for liability purposes;
- An individual eligible to receive an IFQ Crewmember Transfer Eligibility Certificate. An individual can receive a Certificate if (s)he demonstrates in an application to NMFS' satisfaction that (s)he has served at least 150 days as a member of a harvesting crew in any U.S. commercial fishery;
- The individual person who is the heir of a deceased individual QS holder;
- A Community Quota Entity; or
- Any other person, if QS is transferred as a result of a court order, operation of law, or as part of a security agreement. However, if NMFS approves the QS transfer "with restrictions," the agency will not assign IFQ resulting from the restricted QS to any person.

Modifications of the above qualifications to allow other persons or entities to be eligible to hold halibut QS/IFQ would require amendments to the regulations for both the commercial and charter halibut fisheries. The need to change QS holding requirements is common to both the Common Pool Management and Individual Private Management Options. Revision of the eligibility criteria to hold halibut QS would be a Federal action for which certain laws would require an analysis of alternatives and

a public process for the review and adoption of the Council's recommendation to the Secretary. The Federal process can be cumbersome due to legal requirements to maximize public involvement and analysis of alternatives to the proposed regulatory change. This process is prescribed by numerous Federal laws and executive orders (National Environmental Policy Act, Regulatory Flexibility Act, Executive Order 12286, and others). It involves Council analysis of the problem to be addressed and alternative solutions that assess and compare potential environmental and socio-economic impacts.

Option 1: Common Pool Management

This section discusses the elements of potential common pool management regimes. These suboptions would allow a Federal, state, or regional non-profit entity to hold QS in trust for charter operators. This entity would also likely be responsible for entering into the market to purchased additional QS, if and as needed. This responsibility means that the common pool entity must have an accurate gauge of the charter sector's harvest; otherwise, the actions of individual operators could result in greater harvest than the entity has QS to support.

The following sub-sections describe how the entity would hold QS, fund the compensated reallocation, generate revenue, and what limitation would be placed on transfers between the entity and commercial operators.

Element 1.1 Holder and Method of Funding

This section outlines a number of suboptions whereby QS/IFQ would be purchased and held by an entity on behalf of a common pool of charter operators in the individual regions of 2C and 3A. Three possible entities are considered:

A Federal Common Pool
  option 1. loan
  option 2. buyout program
B. State of Alaska Common Pool
  option 1. loan
  option 2. bonding
C. Regional Non-Profit Association Common Pool
  option 1. loan

This section discusses the advantages and disadvantages of each suboption and the associated funding mechanisms.

FEDERAL GOVERNMENT

This option of Element 1.1 would have the Federal government (NMFS) hold halibut QS/IFQ in trust for the common pool of charter operators. NOAA General Counsel staff advised the analysts about whether this arrangement would be supported by current legislation and concluded that this question cannot be answered definitively until a more detailed description of the precise aspects of the program are provided. NMFS is already the trustee for the QS/IFQ program for both halibut and sablefish. However, that role is substantially different from acting as the holder, purchasing agent, and manager of the QS for the charter fleet. In this role, NMFS may have to act not only as trustee, but also good faith negotiator during business transactions for the charter fleet as a whole. NOAA GC staff advised that determining whether NMFS could act as the trustee and what, if any, legislative changes might be required would require a very specific program outline and a detailed review of existing regulations, which is currently lacking (Lepore pers. comm. 2007).

The suite of alternatives contains two suboptions for funding a Federal Government Common Pool. These two suboptions include a loan program and a buyout program. The following sub-sections discuss these suboptions.

North Pacific Loan Program

The North Pacific Loan Program (also known as North Pacific IFQ loan guarantee program) was established by the Council under Sec. 303(d)(4)(A) of the MSA. The loan program underwrites Federal loan obligations for entry level or small boat fishermen wishing to purchase QS in the halibut and sablefish fisheries off Alaska. The loan program is managed by the Financial Services Branch of NMFS' Northwest Regional Office in Seattle.

To be eligible to participate in the loan program, individuals must be qualified to hold QS in the IFQ program for the Alaska sablefish and halibut fixed gear fisheries. In addition, individuals must be either "fishermen who fish from small vessels" or "entry level fishermen," which are defined by the MSA as follows:

- Fishermen who fish from small vessels – Fishermen wishing to purchase individual fishing quotas for use from Category B, Category C, or Category D vessels, as defined in part 676.20(c) of title 50, Code of Federal Regulations (as revised as of October 1, 1995), whose aggregate holdings of individual fishing quotas will not exceed the equivalent of a total of 50,000 pounds of halibut and sablefish harvested in the fishing year in which a guarantee application is made if the guarantee is approved, who will participate aboard the fishing vessel in the harvest of fish caught under such quotas, who have at least 150 days of experience working as part of the harvesting crew in any United States commercial fishery, and who do not own in whole or in part any Category A or Category B vessel, as defined in such part and title of the Code of Federal Regulations.

- Entry level fishermen – Fishermen who do not own any individual fishing quotas, who wish to obtain the equivalent of not more than a total of 8,000 pounds of halibut and sablefish harvested in the fishing year in which a guarantee application is made, and who will participate aboard the fishing vessel in the harvest of fish caught under such quotas.

A qualified applicant does not have to have QS identified to receive a loan; they have up to five years to purchase QS with the loan funds received. This can be done in several loans. The time from application to approval is four to five weeks for a responsive, qualified applicant.

Congress has authorized an annual credit ceiling of $5 million for the North Pacific loan program.[32] This credit ceiling may increase to $8 million in FY2008. The maximum loan term is 25 years, and the interest rate is fixed at 2% above the U.S. Treasury's cost of borrowing from the public for comparable maturities. The loan amount cannot exceed 80% of the actual cost of the QS.

Because the MSA specifies that the loan program is for entry level or small boat fishermen wishing to purchase QS, special Federal legislation would be needed to change the qualification requirements of the loan program and perhaps other aspects of the program to meet the unique needs of the charter sector.

[32] The Federal Credit Reform Act requires that the subsidy costs (estimated loan losses) of a Federal loan program be appropriated in cash at the time Congress authorizes annual credit ceilings. Under the MSA, the subsidy cost of the North Pacific loan program is financed from up to 25 percent of any fees collected from the fishery under the IFQ fee program. However, these fees have not been needed because the subsidy cost for the North Pacific loan program is negative.

This would require discussions with Alaska's congressional delegation and Federal officials from NMFS to determine the process for creating specific eligibility criteria; discussions would also be needed to determine the availability of funding for loans. This process is currently being followed to develop a loan program to provide aid in financing the purchase of QS in the Bering Sea/Aleutian Islands king and Tanner crab fishery.

The North Pacific loan program is considered to be the preferred lender for QS loans because of the low interest rate. For example, as of July 1, 2007 the program offered loans for 6% to 7%, depending on the loan term. In comparison, the State of Alaska's Commercial Fishing Revolving Loan Fund interest rates are 10% for QS loans. Of course, to obtain a loan, an applicant must be found by NMFS to be capable and creditworthy within the context of the specific loan request. The standards used by NMFS are essentially the same as those of private lenders.

The program has been popular due to the favorable lending terms, and loan demand has each year exceeded the $5 million annual loan ceiling. With a budget approved in October, the loan funds generally run out in May or June. Qualified applicants who do not receive a loan are placed on a waiting list for the next year's funding. The loan authority of $5 million has allowed for approximately 30 loans a year, but as the value of QS increases, the number of loans decreases. Increasing the annual credit ceiling may be difficult due to increasing competition for Federal discretionary funds and declining congressional earmarks from Alaska's congressional delegation.[33] Federal discretionary funds have faced increasing pressure in recent years as the wars in Afghanistan and Iraq continue, the Federal government aids areas affected by Hurricane Katrina, the current administration cuts taxes, and social programs such as Medicare, Medicaid, and Social Security grow with an aging population. At the same time, Alaska Senator Ted Stevens no longer chairs the Senate Appropriations Committee, and overall earmarks to Alaska projects are in decline. Thus, pursuing this option would mean participating in an increasingly competitive marketplace for a shrinking pool of Federal dollars.

Fishing Capacity Reduction Program

As stated in Sec. 312(b)(2) of the MSA, the objective of the fishing capacity reduction program is to obtain the maximum sustained reduction in fishing capacity at the least cost and in a minimum period of time. To achieve that objective, NMFS is authorized to pay:

> (A) the owner of a fishing vessel, if the permit authorizing the participation of the vessel in the fishery is surrendered for permanent revocation and the vessel owner and permit holder relinquish any claim associated with the vessel or permit that could qualify such owner or holder for any present or future limited access system permit in the fishery for which the program is established or in any other fishery and such vessel is (i) scrapped, or (ii) through the Secretary of the department in which the Coast Guard is operating, subjected to title restrictions (including loss of the vessel's fisheries endorsement) that permanently prohibit and effectively prevent its use in fishing in Federal or state waters, or fishing on the high seas or in the waters of a foreign nation; or
>
> (B) the holder of a permit authorizing participation in the fishery, if such permit is surrendered for permanent revocation, and such holder relinquishes any claim associated with the permit and vessel used to harvest fishery resources under the permit that could qualify such holder for any

[33] As noted in Footnote 32, the fees collected by the IFQ fee program are available to finance the subsidy costs of the North Pacific loan program. Therefore, diverting more of the fees than are necessary to cover these costs would decrease the amount available to recover IFQ management and enforcement costs without necessarily benefiting the loan program.

present or future limited access system permit in the fishery for which the program was established.

Under an industry fee system, buyout costs are funded by government-backed loans from NMFS. The MSA provides guidelines for the industry fee system, and states that NMFS may conduct a referendum among all permit or vessel owners who would be affected before establishing such a system. Upon approval by the referendum, NMFS may establish appropriate fees that will service the debt for the initial program outlay. The loan interest rate is 2% above the U.S. Treasury's cost of borrowing from the public for comparable maturities. The maximum term for the buyout loan is 20 years. The fees are reviewed and adjusted annually, and they cease when the loan is fully repaid.

No Federally financed buyout has been attempted fully under the MSA framework. For example, special legislation was required to implement the fishing capacity reduction programs in the Bering Sea/Aleutian Islands pollock fishery, Bering Sea/Aleutian Islands king and Tanner crab fishery, and Bering Sea/Aleutian Islands longline catcher processor non-pollock groundfish fishery. In the present case, special legislation would be required because of inconsistencies with the objective in Sec. 312(b)(2); no fishing permits would be revoked and no fishing vessels would be withdrawn by scrapping or title restriction. In any case, Sec. 312(e)(2) requires NMFS to promulgate regulations that establish each program and control its implementation. In addition, congressional legislation is required to authorize and appropriate loan authority. Discussions with Alaska's congressional delegation and Federal officials from NMFS would be necessary to determine availability of funding and the process for creating a specific program.

The steps in a MSA buyout funded by an industry fee system are shown in Table 40. The charter fleet would provide NMFS with a buyout implementation plan in accordance with Sec. 312(b)(2). The plan allows fishermen to design the kind of buyout that the fishing industry wants, is willing to pay for, and will likely approve in a later referendum about the fee system necessary to repay a buyout loan (NMFS undated). The Council's request to NMFS and the buyout implementation plan developed by NMFS are based on the industry's implementation plan. In addition, the charter fleet would have to pass a referendum approving the buyout program and a self-imposed tax or fee to pay back the buyout loan. According to Sec. 312(d)(1)(B), approval of the industry fee system requires "at least a majority of the permit holders in the fishery, or 50% of the permitted allocation of the fishery, who participated in the fishery."

Development and implementation of the buyout program would require serious work by interested private individuals. Sec. 312(b)(4) of the MSA requires the harvester proponents of each buyout program and NMFS to consult with the Council, Federal agencies, state and regional authorities, affected fishing communities, participants in the fishery, conservation organizations, and other interested parties throughout the development and implementation of any buyout program.

A number of Federally financed buyouts have been successfully designed and implemented. These buyouts were based on the MSA framework, but, as indicated earlier, all required special legislation. The present case, however, would represent an especially unique application of the fishing capacity reduction program. As noted above, the fishing capacity of the commercial halibut fleet would not be reduced by revoking fishing permits or withdrawing fishing vessels by scrapping or title restriction (although a reduction in fishing capacity would occur if some commercial fishermen use the reallocation as an opportunity to sell all their QS and leave the fishery). It is an untried and untested proposal which could take considerable time to develop and execute. Even a buyout attempted fully under the MSA through an industry fee system may take approximately two to four years (Table 40).

Funding the buyout through an industry fee system would require extensive support and cooperation within the charter sector and between the charter sector and commercial sector. As noted above, at least a majority of the permit holders in the charter halibut fishery must agree to pay back the loan through fees.

Table 40 Approximate Time to Implement a MSA Buyout Funded by an Industry Fee System

	Days		
Steps	Minimum	Average	Maximum
Industry implementation plan (business plan)	180	270	360
Council request to NMFS	180	270	360
NMFS accepts or rejects	60	90	120
NMFS implementation plan/program regulations	100	150	200
Conduct referendum	30	30	30
Final implementation plan	90	135	180
Bidding	30	30	30
Payment	30	60	90
Implement fee system	30	60	90
Total	730	1125	1520

Source: Adopted from Erwin (2007)

State of Alaska

Under this option, the State of Alaska would hold halibut QS/IFQ in trust for the common pool of charter operators. The State of Alaska could be represented by a state agency or position within an agency (e.g., Commissioner of Fish and Game). This option would require the promulgation of new regulations under the Northern Pacific Halibut Act as the State of Alaska does not currently meet QS holder qualifications.

It is likely that the state would prefer having the responsibility and statutory authority to manage the charter halibut fishery before agreeing to hold halibut QS/IFQ in trust for the charter sector, although this may not be a necessary condition.[34] The delegation of authority to the State of Alaska to regulate charter fishing for halibut would require an amendment by Congress to the Northern Pacific Halibut Act. In April 2007 the Council rejected a motion to support such an amendment. Ginter (2006) discusses the effects of providing authority to state governments to manage sport halibut fisheries.

In comparison to an individual allocation scheme, a common pool arrangement would not give individual charter operators the same ability to assure themselves of sufficient fish to meet the needs of their clients. Some operators may experience a shortage of fish if the pool of QS is insufficient to meet a season's total demand (Tkacz 2007).

The suite of alternatives contains two suboptions for funding a State of Alaska Common Pool. These two suboptions include a loan program and a buyout program. The following sub-sections discuss these suboptions. State loan programs administered by the Division of Investments, Alaska Department of Commerce, Community and Economic Development may provide lending for QS purchases. Three

[34] The Alaska Board of Fisheries has adopted a management approach for some commercial fisheries that has some resemblance to an IFQ program in that a harvest limit is divided so that participants have individual shares of the catch. In 2003, for example, the Board of Fisheries adopted a "shared quota" approach for the Prince William Sound sablefish fishery, whereby half of the GHL for the fishery is allocated equally among registered participants (the balance of the GHL is allocated according to the permit's vessel size class) (Berceli et al. 2005).

possible programs are described: Commercial Fishing Revolving Loan Fund, Small Business Economic Development Revolving Loan Fund, and Rural Development Initiative Fund. These programs were primarily designed to promote economic development through direct state lending in industries that are not adequately serviced by the private sector.

Commercial Fishing Revolving Loan Fund

The Commercial Fishing Revolving Loan Fund (CFRLF) has been in existence since 1973. The statutory purpose of the program is to help Alaska residents enter or remain in commercial fisheries through long-term, low-interest loans. The fund has $35.0 million in cash and investments as of June 30, 2006 (pers. comm., Cathy Jeans, Systems Branch Manger, Division of Investments, Alaska Department of Commerce, Community and Economic Development, August 3, 2007). QS loans are available to eligible individuals under Section C of CFRLF and to eligible communities under Section E of CFRLF.

Section C Loans for Purchase of Quota Shares by Eligible Individuals

In FY1995, statutes were changed to allow CFRLF to finance the purchase of QS. CFRLF requires loan applicants to be Alaska residents for the past two years. Additionally, the following eligibility criteria apply for QS loans:

- Individual holds a limited entry permit or commercial fishing crew license for two of the past five years;
- Individual fished in Alaskan waters during qualifying years;
- Individual qualifies as a transferee for QS. If not an initial issuee of halibut and sablefish fixed gear fishery QS, a copy of an IFQ Crewmember Transfer Eligibility Certificate is required as a part of applications; and
- Individual is not eligible for financing from other recognized commercial lending institutions to purchase QS. DOI requires submittal of denial letters from a recognized QS lender as a part of applications to insure that all applicants seeking loans to purchase QS meet this requirement.

A copy of the purchase agreement and down payment receipt for the QS being purchased is also required as a part of applications. However, if an individual has not located QS to purchase, (s)he may seek conditional approval by submitting a prequalification application; if granted, the approval is valid for 60 days. The total balance outstanding on all QS loans made to an individual under Section C of the CFRLF may not exceed $300,000. Generally, the maximum loan amount for a loan secured by QS is 65% of the purchase price. The maximum loan amount may be increased by offering additional collateral. Interest rates are fixed at the time of loan closing. The interest rate is 2% above the bank prime rate, not to exceed 10.5%. Beginning in FY2000, DOI implemented a pay-on-time program that lowered the interest rate an additional percent if full loan payments were received in a timely manner. The maximum term for new loans is 15 years. A 1% loan origination fee is deducted from loan proceeds at closing.

Section E Loans for Purchase of Quota Shares by Eligible Communities

Loans are available to Community Quota Entities (CQE) for the purchase of QS and reimbursement of QS purchases less than 12 months from the date the application is received. The CQEs are non-profit entities incorporated under the laws of the State of Alaska to represent eligible communities seeking to participate in the halibut and sablefish IFQ program. A CQE can purchase and hold QS and "lease" annual IFQ permit amounts to residents of the community or communities on whose behalf the QS is held. The CQE program does not provide QS/IFQ or funds to purchase QS/IFQ; it simply provides the

opportunity for communities to participate in an IFQ program that has traditionally only been open to individuals.

The general requirements for a CQE to receive a QS loan are as follows:

- CQE is certified by NMFS and is eligible to hold QS;
- CQE is in good standing with the State of Alaska and Federal government; and
- CQE is not eligible for financing from other recognized commercial lending institutions. DOI requires submittal of denial letters from a recognized QS lender as a part of applications to insure that all applicants seeking loans to purchase QS meet this requirement.

A copy of the purchase agreement and down payment receipt for the QS being purchased is also required as a part of applications. However, if a CQE has not located QS to purchase, it may seek conditional approval by submitting a prequalification application; if granted, the approval is valid for 60 days.

The maximum loan is $2 million for each eligible community. The total balance outstanding on all loans made to a community is $2 million. The maximum loan amount for a loan secured by QS is 65% of the purchase price. Other types of collateral may also be offered to reduce the down payment requirement.

Interest rates are fixed at the time of loan closing. The interest rate is 2% above the bank prime rate, not to exceed 10.5%. The maximum term for new loans is 15 years. A 1% loan origination fee is deducted from loan proceeds at closing.

Small Business Economic Development Revolving Loan Fund

This program provides loans for the start up or expansion of businesses that will create or retain jobs in eligible areas (areas affected by high unemployment, low average income, etc.) as determined by the U.S. Economic Development Administration. Most areas in Alaska are eligible; exceptions include the Municipality of Anchorage, the Borough/City of Juneau, and the Aleutians East Borough. In addition, applicants are required to obtain additional private financing, generally in an amount not less than twice the amount requested under the application. Current cash available for lending in the Small Business Economic Development RLF is $659,000 (pers. comm., Cathy Jeans, Systems Branch Manger, Division of Investments, Alaska Department of Commerce, Community and Economic Development, August 3, 2007).

Interest rates are fixed at the time of loan closing. The interest rate is the bank prime rate minus 4%, not to be less than 4%. The term of the loan is determined by the Loan Administration Board. The maximum loan term is 20 years. The maximum loan amount is $300,000, and the minimum is $10,000. A 1% loan origination fee is deducted from loan proceeds at closing.

Rural Development Initiative Fund

This program provides financing for the start-up and expansion of businesses that will create significant long-term employment. Loan funds are earmarked for businesses that serve the fishing industry. Loans may be made to a business located in a community with a population of 5,000 or less that is not connected by road or rail to Anchorage or Fairbanks, or with a population of 2,000 or less that is connected by road or rail to Anchorage or Fairbanks. A reasonable amount of money from other non-state sources must be committed for use on any project for which money from a loan will be used. Current cash available for lending in the Rural Development Initiative Fund is $1.24 million (pers. comm., Cathy Jeans, Systems Branch Manger, Division of Investments, Alaska Department of Commerce, Community and Economic Development, August 3, 2007).

Interest rates are fixed at the time of loan closing. The interest rate is the bank prime rate minus 1%, not to be less than 6%. The maximum loan term is 25 years. The maximum loan amount is $100,000 to a person or up to $200,000 to two or more people. A 1% loan origination fee is deducted from loan proceeds at closing.

Any revision in the eligibility criteria for a loan issued under these state loan programs would require a change of state law.

The interest rate is higher and loan term is shorter under the CFRLF in comparison to the interest rate and loan terms offered by the NMFS North Pacific Loan Program. Nevertheless, the CFRLF has issued loans totaling $19.9 million for the purchase of halibut QS (pers. comm., Cathy Jeans, Systems Branch Manger, Division of Investments, Alaska Department of Commerce, Community and Economic Development, August 3, 2007). However, no Section E loans have been issued to a CQE. One problem is that a CQE has been unable to raise sufficient collateral to qualify for a loan; as noted above, the maximum loan amount for a loan secured by QS is 65% of the purchase price.

To obtain a loan, an applicant must be found by the Division of Investments to be capable and creditworthy within the context of the specific loan request. The standards used by the Division of Investments are essentially the same as those of private lenders. However, the state loan programs are less profit-driven than private lending institutions and may be more amenable to working with borrowers who are facing loan default.

State-Issued Bonds

Revenue bonds, like loans, are debt instruments and are repaid through revenue streams. This option could be modeled after the recent revenue bonds offered to finance the State of Alaska's construction and refurbishment of sport fish hatchery infrastructure around the state (AS 37.15.765 - 37.15.799). The implementing legislation allows the Alaska Department of Fish and game to bond for $69 million to pay for the cost of the enhancements and establishes a surcharge on resident and non-resident sport fishing licenses to repay the bond debt. The surcharge was structured in order to generate just over $6 million in new revenue annually—the same amount as the annual debt service on the bond. The surcharge will terminate when the bond debt is repaid, which is estimated to take 20 years. Proceeds received from the sale of the bonds, other than the proceeds used to pay the cost of issuance and administration and the proceeds deposited in the bond reserve account, are deposited in a special account in the fish and game fund established under AS 16.05.100. Upon completion of the purposes for which the bonds are issued, the Commissioner of Revenue transfers any unexpended and unobligated bond proceeds to the Alaska Fish and Game revenue bond redemption fund to pay outstanding principal, interest, or redemption premium, if any, owing on the bonds.

The state was able to receive a favorable rating for the hatchery revenue bonds—the deal achieved underlying ratings of A2 from Moody's Investors Service and A from both Standard & Poor's and Fitch Ratings. The state has chosen to enhance the credit to AAA through the use of bond insurance, thereby reducing risk for investors. The rating goal was achieved in large part with the use of conservative revenue projections. In addition to the pledge of revenue from the surcharge, which is expected to fully cover debt service, the state also pledges revenue from the basic fishing license fee, fees from king salmon stamps, and Federal grant revenue (Saskal 2006).

State legislation would be required to authorize the issuance of revenue bonds to finance the purchase of QS and to establish a revenue stream to fully cover debt service (e.g., charter stamp).

Using state-issued revenue bonds to finance the purchase of QS has a number of advantages—borrowing costs are at a reasonable rate, needs are user-financed, and there is no cost to the tax payer. On the other hand, the steps required to put together a bond package and sell it are complicated.

A likely condition for issuing revenue bonds to purchase halibut QS would be for the State of Alaska to have statutory authority to manage the charter halibut fishery. The delegation of authority to the state to regulate charter fishing for halibut would require an amendment by Congress to the Northern Pacific Halibut Act. In April 2007 the Council rejected a motion to support such an amendment to the Halibut Act, which did not directly speak in favor or against actual delegation to the state. Council members voting against the motion felt that it is premature at this time to seek any changes.

Regional Non-Profit Association

Under this option, a regional non-profit association (RNPA) consisting of participants in the halibut charter fishery would hold halibut QS/IFQ on behalf of the common pool of charter operators. The association could be modeled after existing regional non-profit associations created under State of Alaska statutes. For example, AS 16.10.380 allows the formation of a Regional Aquaculture Association for the purpose of enhancing salmon production, while AS 44.33.065 allows the formation of a Regional Seafood Development Association for the purpose of marketing and promoting seafood products. Both of these types of associations have the statutory authority to conduct elections for a region's permit holders to vote on a self-imposed state tax.

A primary certification requirement for a Regional Aquaculture Association is a board of directors, comprised of a broad cross-section of the geographical region's user groups. The board of directors must include representatives of commercial fishing harvesters and representatives of other user groups interested in fisheries within the region, and must include no less than one representative of each user group within the association. User groups include sport, commercial, and subsistence fishing harvesters, processors, and local community representatives. Similarly, a Regional Seafood Development Association must provide for representation of commercial fishing permit holders for each fishery in the region that is subject to a self-imposed seafood development tax on the board of directors of the organization.

Alternatively, a non-profit regional association could be modeled after the Community Quota Entities (CQEs) created under Federal regulations.

Under Sec. 303A(c)(4) of the MSA, regional councils can authorizes limited access privileges to be held by qualified regional fishery associations.[35] However, this provision applies only to a limited access

[35] According to Sec. 3(14) of the MSA, a regional fishery association "means an association formed for the mutual benefit of members (A) to meet social and economic needs in a region or subregion; and (B) comprised of persons engaging in the harvest or processing of fishery resources in that specific region or subregion or who otherwise own or operate businesses substantially dependent upon a fishery." To be eligible to participate in a limited access privilege program, a regional fishery association must—

(i) be located within the management area of the relevant Council;

(ii) meet criteria developed by the relevant Council, approved by the Secretary, and published in the Federal Register;

(iii) be a voluntary association with established by-laws and operating procedures;

(iv) consist of participants in the fishery who hold quota share that are designated for use in the specific region or subregion covered by the regional fishery association, including commercial or recreational fishing, processing, fishery-dependent support businesses, or fishing communities;

system created under the MSA; as discussed above, the limited access system for the halibut fishery was established through regulations promulgated under the Northern Pacific Halibut Act.

As discussed in above, this option would require the promulgation of new regulations under the Northern Pacific Halibut Act.

Non-profit incorporation can be accomplished by filing articles of incorporation and bylaws, along with a filing fee, to the Securities, Banking and Corporations Division of the Alaska Department of Commerce, Community and Economic Development. The formation of a non-profit regional association representing the charter sector that is modeled after a Regional Aquaculture Association or Regional Seafood Development Association would require a change of law by the Alaska Legislature. The formation of a non-profit regional association representing the charter sector that is modeled after a Community Quota Entity would require an amendment to the FMP for Groundfish of the Gulf of Alaska.

The purchase and holding of QS by a regional non-profit association would require the formation of a stable organization capable of recruiting charter operators as members. The identification or creation of an appropriate regional association would require extensive support and cooperation among members of the charter sector. The level of cooperation needed may be difficult to achieve as evidenced by the divergent views of the Alaska Charter Association and Halibut Charter Coalition of Alaska with respect to sport halibut management issues.[36] Further cooperation among members would be required to secure funds for the purchase of QS. Participating in a regional non-profit association requires surrendering some individual independence, and members would incur the costs associated with organizing and running the association.

An advantage of allowing a regional non-profit association to hold and administer QS is that an association could provide its members control over the funding source(s) used to purchase QS and the amount of QS purchased. As noted above, Regional Aquaculture Associations and Regional Seafood Development Associations have the ability to establish a self-imposed state tax to fund activities that further the purposes of the associations. Furthermore, an association would control the allocation of QS among members, and could impose restrictions on the use of QS by members.

In addition, an entity independent of the Federal or state government could be more flexible and might be able more quickly to take advantage of favorable market conditions for QS then a Federal or state-administered program. A potential added benefit to association members is that the association could be used for purposes other than purchasing and holding QS; for example, it could engage in activities that promote the charter fishing industry such as preparing market research and developing advertising or sales promotion programs.

(v) not be eligible to receive an initial allocation of a limited access privilege but may acquire such privileges after the initial allocation, and may hold the annual fishing privileges of any limited access privileges it holds or the annual fishing privileges that its members contribute; and

(vi) develop and submit a regional fishery association plan to the Council and the Secretary for approval based on criteria developed by the Council that have been approved by the Secretary and published in the Federal Register.

[36] Other organizations that have been vocal in the sport halibut management issues are the Homer Charter Association, Alaska Sport Fishing Alliance, and Southeast Alaska Fishermen's Alliance (Alaska Sea Grant Marine Advisory Program 2007).

Regional Non-Profit Association Funding Options

The suite of alternatives outlines one option for the RNPA: a loan program. A loan would have to originate from a Federal, state, or private source. The Federal and state loan programs outlined above would require legislative changes in order to make an RNPA an eligible borrower.

It may be possible to finance the purchase of QS through a bank loan program. For example, presentations at a recent conference on Alaska's fishing communities noted that both Wells Fargo and the Alaska Commercial Fishing and Agriculture Bank make loans to purchase QS/IFQ (Stewart 2006; Klingert 2006). Commercial banks were typically the second most important source used to finance commercial halibut QS transferred in "priced sales" transactions in 1995-1998 (Dinneford et al. 1999). Some private banks may not accept QS as collateral for loans because they are not comfortable with the existing system established by NMFS for tracking the existence of a security interest against QS used as collateral. Under a "courtesy system," a private lender can assert a security interest to NMFS and the agency will note that in the database. If NMFS receives an application to transfer the quota, it will notify the private lender who asserted the interest and provide the lender ten days to halt the transfer with a court order. However, for QS, a private lender has to file a lien under the Uniform Commercial Code (in Alaska, with the Recorder's Office in the Department of Natural Resources) to have an enforceable action against the asset.

While not actively considered in the June Motion, the authors note that an RNPA with a proven and dedicated revenue stream could try to pursue the equivalent of corporate bonds. The analysis did not fully explore this option, but notes that an RNPA should be able to enter into bonding agreements.

Element 1.2 Revenue Stream

Element 1.2 defines the revenue stream which would be used to pay back any debt associated with the compensated reallocation. The options considered include:

A. Federal Common Pool
    option 1. halibut charter stamp
    option 2. moratorium permit fee
    option 3. self-assessment fee
        suboption 1. fee is based on number of clients
        suboption 2. fee is based on number of fish
B. State of Alaska Common Pool
    option 1. charter stamp
    option 2. sportfishing license surcharge
    option 3. business license fee/surcharge or limited entry permit holder
        suboption 1. fee is based on number of clients
        suboption 2. fee is based on number of fish
C. Regional Non-Profit Association Common Pool
    option 1. self-assessment
        Suboption 1. fee is based on number of clients
        Suboption 2. fee is based on number of fish

The June 2007 motion states that "Revenue streams will be for a defined period and end after the loan or bond is paid off, i.e. continuous open-ended revenue streams are to be avoided."

Irrespective of which revenue stream may eventually be considered, each one will eventually come back to the same question: "How much will have to be borrowed to finance the compensated reallocation?" There are a number of important questions which will determine the program's ultimate cost and this

analysis attempts to make a reasonable first-estimate of the programs costs by making certain assumptions. These important questions and assumptions include:

- *What is the projected growth of the charter industry in the coming years?* The analysis projected future charter harvests through 2015 using the status quos for both Area 2C and Area 3A and long-term growth rates. The projections also use the long-term (i.e., 1995-2006) industry growth rates to create a lower expectation of future harvests and the five-year (i.e., 2001-2006) average growth rates to create a higher projection of future harvests. Table 41 shows the projected charter harvests under the assumptions described above and the difference between the projected harvest and the GHL. Charter growth is not linear and the industry has experienced years where total harvest declines from previous years. Thus, these projections represent projections of trends based on averages and for simplicity this draft only projects the pounds and QS needed under the current status quo.

Table 41 Projected Charter Harvest, 2006-2015 (Mlb)

	Area 2C				Area 3A			
	Projected Charter Harvest (Mlb)		Pounds Needed Above GHL (Mlb)		Projected Charter Harvest (Mlb)		Pounds Needed Above GHL (Mlb)	
Year	Low Avg.	High Avg.	Low Avg.	High Avg.	Low Avg.	High Avg.	Low Avg.	High Avg.
2006	2.035	2.035	0.603	0.603	3.947	3.947	0.297	0.297
2007	1.622	1.846	0.190	0.414	3.635	3.696	-0.015	0.046
2008	1.457	1.698	0.025	0.266	3.745	3.871	0.095	0.221
2009	1.556	1.896	0.124	0.464	3.858	4.054	0.208	0.404
2010	1.662	2.118	0.230	0.686	3.975	4.246	0.325	0.596
2011	1.776	2.365	0.344	0.933	4.095	4.447	0.445	0.797
2012	1.896	2.641	0.464	1.209	4.219	4.657	0.569	1.007
2013	2.026	2.950	0.594	1.518	4.346	4.878	0.696	1.228
2014	2.164	3.294	0.732	1.862	4.477	5.109	0.827	1.459
2015	2.311	3.679	0.879	2.247	4.613	5.351	0.963	1.701

Source: NEI Estimates, 2007

- *How many QS units would the Common Pool need to purchase?* For straw man purposes, the analysis assumes that the charter fleet needs to acquire QS the difference between their projected harvest and the current GHL. There are a number of different potential allocations under consideration in Alternative 2, Action 1. The options which provide a higher initial allocation than the current GHL would mitigate some the effects noted in this section. The analysis uses the 2007 QS conversion factor to convert the difference between these two numbers into QS which must be bought to meet this assumption.[37] Table 42 shows projected QS needs based on projected charter harvests.

[37] The 2006 QS conversion factor was used for 2006 estimates. After 2006 the 2007 QS is used.

Table 42 Charter Fleet QS Needs, 2006-2015

Year	Projected QS Units Needed (Millions of Units)			
	2C Low	2C High	3A Low	3A High
2006	3.378	3.378	2.179	2.179
2007	1.330	2.897	-0.104	0.322
2008	0.176	1.859	0.671	1.557
2009	0.870	3.247	1.469	2.851
2010	1.612	4.797	2.292	4.205
2011	2.404	6.529	3.139	5.624
2012	3.250	8.462	4.012	7.110
2013	4.154	10.621	4.912	8.666
2014	5.119	13.033	5.839	10.296
2015	6.150	15.726	6.793	12.003

Source: NEI Estimates, 2007

- *What is the projected cost of purchasing the QS?* The analysis projected a low and high cost for purchasing halibut based on 2006 halibut purchases recorded by NMFS RAM Program (see Table 43). The low cost assumes that all of the QS purchased come from the lowest cost QS vessel class sizes (Class D) while the high cost scenario assumes that all of the QS purchased come from the most expensive vessel class (Class B).[38] How much the program will cost will depend on how much QS must be purchased and the cost of QS at the time of the purchase. For example, under 2006 conditions, the charter industry in Area 3A would have needed to make a one-time purchase of halibut QS worth between $4.7 and $6.2 million. However, if a common pool program needs to cover the harvest-to-allocation differential in 2010 for Area 3A, then the program would need to buy between $4.9 million and $11.9 million in QS depending on the growth rates. The table represents the one-time purchase costs associated with the program as opposed to a yearly purchase cost. For example, the purchase amount for 2015 would cover all of the harvest from 2006-2015 as the estimated harvest amount in 2015. The amount that must be purchased is a moving target based on the amount that is needed and the price of QS. A lower initial allocation means more will have to be purchased and forewarning of an upcoming compensated reallocation will raise the price of QS. *The estimates used in this analysis assume an initial allocation equal to the current GHL. A higher initial allocation will result in lower repayment figures.*

Table 43 Average QS and IFQ Equivalent Prices for 2006 "Arms Length" Transactions

Range	Per QS Unit		Per Pound	
	2C	3A	2C	3A
Lowest Average (Class D)	$2.60	$2.14	$14.58	$15.69
Weighted Average of All Traded Shares	$3.20	$2.58	$17.90	$18.93
Highest Average (Class B)	$3.60	$2.83	$20.19	$20.76

Source: Source: NEI Estimates based on NMFS RAM Program, 2007

[38] There are not enough Class A QS in existence to supply all of the charter fleets' projected needs in future years. Additionally, many commercial operators have expressed concern about the charter fleet purchasing the lowest cost QS and making it difficult for entry-level commercial fishermen to enter the halibut fleet.

Table 44 Projected One-Time Purchases Costs Assuming 2006 Average Prices

Year	Projected Purchase Cost ($M)			
	2C Low	2C High	3A Low	3A High
2006	$8.8	$12.2	$4.7	$6.2
2007	$3.5	$10.4	-$0.2	$0.9
2008	$0.5	$6.7	$1.4	$4.4
2009	$2.3	$11.7	$3.1	$8.1
2010	$4.2	$17.3	$4.9	$11.9
2011	$6.3	$23.5	$6.7	$15.9
2012	$8.5	$30.5	$8.6	$20.1
2013	$10.8	$38.3	$10.5	$24.5
2014	$13.3	$47.0	$12.5	$29.1
2015	$16.0	$56.7	$14.5	$34.0

Source: NEI Estimates, 2007

Element 1.2 contain common elements where the fees can either be broken down to the "per unit" level by the number of permits, the number of unique clients, the number of fish harvested, or the number of client days. For example, the expected annual fee associated with an annual Federal or state charter stamp would be approximately the same (minus any difference in administrative costs). The "per unit" costs for each of these options will depend on the amount borrowed, the interest rate, and the length of the repayment period (if any). The analysis estimated the "per unit" costs for each option based on 2006 conditions, a ten year repayment period, and a range of interest rates (see Table 45).[39]

In summary, the analysis estimates that:

- A per client day fee on charter operators would cost them between $10 and $20 in Area 2C and between $5 and $10 in Area 3A. If these charges were passed on to the client they would raise the direct charter fee by between 5% and 15% given the current price range for charters.
- An annual stamp mechanism would cost between $20 and $30 per person in Area 2C and between $5 and $10 in Area 3A.
- A sportfishing license surcharge would spread the cost in both IPHC areas across all purchasers of an Alaska sport fishing licenses. This fee would add an average of $10 to $15 to the cost of a license.[40]
- A per fish harvested fee would range between $10 to $15 in Area 2C and between $5 and $10 in Area 3A.
- A flat, annual moratorium permit fee or business license fee would range from $3,200 to $5,000 in Area 2C and between $1,300 and $2,000 in Area 3A.

[39] Estimates are rounded to the nearest $5 except for permit costs, which are rounded to the nearest $100. We round these estimates because while the estimation technique is very precise, the large number of assumptions feeding into the estimates means that precise estimates are not very reliable.

[40] Note that these numbers are an average cost. The state usually has a lower than average surcharge for residents while using a higher than average surcharge for non-residents. The surcharge for the recent hatchery construction bonds ranges between $9 for residents to $45 for non-residents purchasing a full-year license. The analysis notes that under given halibut's status as a jointly managed species that residents and non-residents would have to be charged the same fee.

Table 45 Projected Per Unit Payments Based on 2006 Conditions

Unit Measure	6% Interest		7% Interest		8% Interest		9% Interest	
	Low	High	Low	High	Low	High	Low	High
Area 2C								
Per Client Day Fee	$15	$20	$15	$20	$15	$20	$15	$20
Unique User Fee (Stamp Fee)	$20	$25	$20	$25	$20	$25	$20	$30
Per Fish Harvested Fee	$10	$15	$10	$15	$10	$15	$10	$15
Per Moratorium Permits[41]	$3,200	$4,400	$3,300	$4,600	$3,500	$4,800	$3,600	$5,000
Area 3A								
Per Client Day Fee	$5	$5	$5	$5	$5	$5	$5	$10
Unique User Fee (Stamp Fee)	$5	$10	$5	$10	$5	$10	$5	$10
Per Fish Harvested Fee	$5	$5	$5	$5	$5	$5	$5	$10
Per Moratorium Permits	$1,300	$1,800	$1,400	$1,800	$1,500	$1,900	$1,500	$2,000
License Surcharge	$10.00	$15.00	$10.00	$15.00	$10.00	$15.00	$10.00	$15.00

Source: NEI Estimates, 2007

These results are highly dependent on the expected interest rate, how much the common pool would need to purchase, and the expected pay-back period. Appendix II shows the expected per unit pay-back rates associated with 5-year, 10-year, and 20-year repayment schedules for the common pool if the pool purchased the QS required to support the estimated harvest levels in 2006.

Federal Common Pool Options

The Federal Common Pool contains three revenue stream options. These include a Federal halibut charter stamp, a moratorium permit fee, and a self-assessment fee based on either the moratorium permit holder's number of clients or the number of fish harvested. Discussion with NOAA GC staff indicate that none of the common pool revenue streams can be accomplished solely through Council action. All of the options require Federal legislation (Lepore 2007). The following sub-sections note the most important issues associated with each option.

Federal Halibut Charter Stamp

There are two major drawbacks associated with a Federal halibut stamp. These include the need for Federal legislation and the difficulties in ensuring that money generated in Alaska from the halibut fishery would flow into this program. As noted above, discussions with NOAA GC staff indicated that the Federal Halibut Charter Stamp requires Federal legislation. Specifically, current Federal law only allows NOAA to collect fees associated with individual fishing privileges such as ITQs (Lepore 2007). Under the common pool management regime, revenues would not flow from an individual fishing privilege but from the right to harvest within a group management regime. The same legislation would also need to specify that revenues generated from the group management system flow into a fund for purchasing QS.

As noted above, an annual stamp mechanism would cost between $20 and $30 per person in Area 2C and between $5 and $10 in Area 3A.

Moratorium Permit Fee

A moratorium permit fee within a common pool management system faces many of the same hurdles including the need for Federal legislation as current Federal law only allows NOAA to collect fees

[41] The number of moratorium permits was provisionally estimated by ADF&G using 2006 data.

associated with individual fishing privileges such as ITQs. As with the Federal Halibut Charter Stamp, the same legislation would also need to specify that revenues generated from the group management system flow into a fund for purchasing QS. As discussed above, a flat, annual moratorium permit fee or business license fee would range from approximately $3,200 to $5,500 in Area 2C and between $1,300 and $2,000 in Area 3A if the fee were used as the revenue source for repaying loans to purchase an initial allotment of QS under the conditions described previously.

One of the most important issues with a moratorium permit fee is that it disconnects the operator with the marginal cost to the common pool of harvesting another halibut. For example, an operator growing his or her business would likely expect that the common pool would carry enough QS to cover the growth of the business, but a flat moratorium permit fee would spread the cost of that individual's growth over all of the other operators whether they were growing or not. This problem conflicts directly with Implementation Issue #10 (see page 89).

Self-Assessment Fees

It is not clear that a true "self-assessment" fee based on the number of clients or the number of fish harvested would be allowed under the Federal common pool management regime given that current Federal law only allows NOAA to collect fees associated with individual fishing privileges such as ITQs (Lepore 2007). As with the other options included under the Federal Common Pool the "self-assessment" fee would require the some changes in Federal regulations. A per client day fee on charter operators would cost between $15 and $20 in Area 2C and between $5 and $10 in Area 3A, while a per fish harvested fee would range between $10 to $15 in Area 2C and between $5 and $10 in Area 3A. These numbers assume 2006 conditions, a 10-year payoff period, and interest rates between 5% and 10%.

The analysis notes that in order to avoid the problem of "free riders" these fees would likely work best as a tax based on the number of fish harvested or the number of paying clients. An important issue with a tax based on the number of fish harvested is that it creates an incentive for charter operators to lower their client's success rates as they could charge the clients for the trip but not have to worry about paying the per fish harvest fee.

State of Alaska Common Pool Options

The State of Alaska Common Pool approach contains three revenue stream options. These include a charter stamp, a sportfishing license surcharge, and a business license fee or surcharge based on either the moratorium license holder's number of clients or the number of fish harvested. As noted above, the state staff indicated that state-managed revenue streams only make sense if the State of Alaska will 0also be managing the common pool. In addition, the state has indicated that running both the common pool and the associated revenue streams would be easier if the state had full management authority for the halibut fishery (Vincent-Land 2007). The following sub-sections note the most important issues associated with each option.

State Charter Stamp

The State of Alaska would not be authorized to institute a halibut-only charter stamp, because unlike the other recreational fisheries requiring a stamp (i.e., the king salmon fishery), the state does not directly manage the recreational halibut fishery. Thus, a state charter stamp would cover all charter fisheries and not just the halibut fishery. As noted in NPFMC (2006), this situation results in two primary issues. The first is that this system would tax anglers and businesses that are not targeting halibut. The same problem would exist for anglers who specifically target salmon, rockfish, or other non-halibut species. They represent potential revenue sources as charter consumers, but requiring them to purchase a charter stamp

would be taxing them for a program that would not benefit them. The second issue is that ADF&G lacks the authority to dedicate revenues from charter anglers directly to purchase of QS. While the first issue is troubling from an equity standpoint, the second issue represents a problem in that it could undermine the ability of the common pool to pay back any bonded debt or loans associated with the compensated reallocation.

A charter stamp could be a yearly stamp or a per client day fee or a mix of the two options. A per client day fee on charter operators would cost them (and their passengers) between $15 and $20 in Area 2C and between $5 and $10 in Area 3A. An annual stamp mechanism would cost between $20 and $30 per person in Area 2C and between $5 and $10 in Area 3A. These estimates include assumptions of QS needs at 2006 levels and a 10-year repayment period.

Sportfishing License Surcharge

The State of Alaska has used sportfishing license surcharges to fund bonded debt in the past. Current recreational fishing license fees contain a surcharge dedicated to paying off the bonded debt associated with the construction of two new hatcheries. The amount of the surcharge varies between resident and non-resident licenses. A sportfishing license surcharge would spread the cost in both IPHC areas across all purchasers of Alaska sport fishing licenses. Hence, the fee would affect anglers who never pursue halibut. This fee would add an average of $10 to $15 to the cost of a license if all license purchasers pay the same fee. The state usually has maintained lower charges for residents while placing higher charges for non-residents.

Business License Fee/Surcharge or Limited Entry Permit Holder Fee

A Business License Fee/Surcharge or Limited Entry Permit Holder fee would represent a tax on a business as opposed to a direct tax on the angler. The form of this tax is important, as a flat tax can directly affect the competitiveness of businesses. For example, the analysis estimates that a flat moratorium permit fee or business license fee would range from $3,200 to $5,000 in Area 2C and between $1,300 and $2,000 in Area 3A. The fee would not necessarily vary by the size of the charter operator's business. A flat system such as this one would absorb a disproportionately higher portion of a small operator's income. A fee that floated by business size has the potential to be "competition neutral" and not directly affect the competitiveness of businesses. For example, a per fish harvested fee or a per client day fee would affect small and larger users equally if the fee is passed directly to the client. A per client day fee on charter operators would cost between $15 and $20 in Area 2C and between $10 and $15 in Area 3A, while a per fish harvested fee would range between $10 to $15 in Area 2C and between $5 and $10 in Area 3A.

Regional Non-Profit Association Common Pool Options

Self-Assessment Fee

A regional non-profit association could establish a self-imposed state tax modeled after the Regional Aquaculture Associations and Regional Seafood Development Associations.[42] These associations conduct elections for a region's permit holders to vote on a self-imposed state tax. Permit holders are allowed one ballot for each permit held. The tax is collected by the Department of Revenue and disbursed only to Regional Aquaculture Associations and Regional Seafood Development Associations by annual

[42] As noted above, the formation of an association representing the charter sector with the ability to vote for a self-imposed state tax would require a change of law by the Alaska Legislature.

legislative grants through the Department of Commerce, Community, and Economic Development.[43] According to AS 43.76.370(b), a seafood development tax on fishery resources taken in a fishery may only be levied and collected by a Regional Seafood Development Association if:

1. the levy of the tax is approved by a majority vote of the eligible interim-use permit and entry permit holders in the fishery who vote in an election held under this section;
2. at least 30% of the eligible interim-use permit and entry permit holders in the fishery cast a ballot in the election to levy the tax; and
3. election results are certified by the commissioner of commerce, community, and economic development.

For Regional Aquaculture Associations and Regional Seafood Development Associations, the self-imposed state tax rate is applied to the ex-vessel value of fish in the region where caught; however, a regional non-profit association representing the charter sector might vote to assess a fee per client or a percentage of the fee charged for a charter.

The Council's approved motion from June 2007 contains two suboptions: a fee based on the number of clients and a fee based on the number of fish harvested. As previously discussed, a per client day fee on charter operators would cost them between $15 and $20 in Area 2C and between $5 and $10 in Area 3A. A per fish harvested fee would range between $10 to $15 in Area 2C and between $5 and $10 in Area 3A.

Element 2.1 Limits on Transferability

Element 2.1 limits the amount of halibut quota that can be transferred between the commercial and charter fleets based on the "combined commercial and charter catch limit."[44] The limits on transferability create a minimum and maximum size to the harvest that could be used by either sector. However, given the long-term growth in the charter industry, the likely net effect of this provision would be to create a cap on the maximum size of the charter fleet and their associated harvests while creating a floor under the percentage of total harvest that the commercial fleet could access. The element defines the percentage of the combined commercial and charter catch limit that would be available for transfer between the sectors at: Option 1) 10%; Option 2) 15%; Option 3) 20%; or Option 4) 25%. Table 46 shows the estimated harvest amounts that would be available for harvest based on 2007 charter GHLs and commercial catch allowances.[45] The suboptions would allow between 994,000 pounds and 2.486 Mlb to be transferred in Area 2C and between 2.985 Mlb and 7.463 Mlb under 2007 allocation amounts.[46]

[43] The tax money collected by the Alaska Department of Revenue must be deposited into the state general fund and then appropriated by the Alaska Legislature because of the constitutional prohibition against dedicated funds.

[44] The analysis notes that there is no allocation that currently matches the exact wording of "combined commercial and charter catch limit."

45 IPHC staff recommended using 2007 data for this part of the analysis, given that the GHL was used to set the 2007 commercial catch limit and the 2007 biomass estimates are likely to be more reflective of available biomass than 2006 data. The analysis uses the status quo alternative as the standard for comparison due to the time allocated for preparation of the analysis. The public review draft could expand the analysis to address additional initial allocation alternatives under Action 1.

[46] We note that Total CEY in Area 2C fell between 2006 and 2007 because of changes in the IPHC's analytical model. This change would reduce the transferable amount and reinforces the conclusions found in this section.

Table 46 Estimated 2007 Harvest Available for Transfer (Mlb)

Area	2007 Commercial Catch Limit	2007 Charter GHL	Combined Harvest Level (Mlb)	10% Transfer Allowance	15% Transfer Allowance	20% Transfer Allowance	25% Transfer Allowance
2C	8.510	1.432	9.942	0.994	1.491	1.988	2.486
3A	26.200	3.650	29.85	2.985	4.478	5.970	7.463

Source: NEI Estimates, 2007

The analysis projects charter harvests forward through 2015 for both Area 2C and Area 3A. These projections reflect the status quo in both areas, including approved Council actions (see NPFMC 2006b). The projections use the long-term (i.e., 1995-2006) industry growth rates to create a lower expectation of future harvests and the five-year average growth rates to create a higher expectation of future harvests.

In Area 2C growth rates average just over 6% in the long-term and just over 11% over the past five years. The analysis estimates that the 10% transfer allowance could cap charter harvests as early as 2014 if Area 2C charter harvest grows at the rate seen over the past five years. The 15% suboption would allow continued growth until 2015, while a 20% transfer allowance or more would likely be needed after 2015. Under the slower growth rate, the Area 2C charter fleets harvest would not be capped by 2015, but would eventually be capped by this measure shortly after 2015.

Table 47 Minimum Transferable Amount Needed Based on Projected Charter Harvest Growth, Area 2C

Year	Projected Charter Harvest Mlb)		Required Transfer Amount (Mlb)		Minimum Transfer Percentage Needed	
	Low Average	High Average	Low Average	High Average	Low Average	High Average
2007	2.035	2.035	0.603	0.603	10%	10%
2008	1.622	1.846	0.190	0.414	10%	10%
2009	1.457	1.698	0.025	0.266	10%	10%
2010	1.556	1.896	0.124	0.464	10%	10%
2011	1.662	2.118	0.230	0.686	10%	10%
2012	1.776	2.365	0.344	0.933	10%	10%
2013	1.896	2.641	0.464	1.209	10%	10%
2014	2.026	2.950	0.594	1.518	10%	15%
2015	2.164	3.294	0.732	1.862	10%	15%

Source: NEI Estimates, 2007.

Figure 9 displays the information contained in Table 47. The solid black line reflects harvest growth based on slower, long-term growth rates, while the dotted black line shows growth projected using faster, recent growth rates. The gray lines denote the approximate level use caps that would result from the suboptions discussed above. The point at which the black lines cross the grey lines shows when the analysis projects that each transferability allowance would cap charter sector growth. Factors such as a falling CEY or a relaxation of the management standards proposed by the Council in NPFMC (2007b) for Area 2C would result in the charter industry reaching a harvest cap earlier than projected by this analysis.

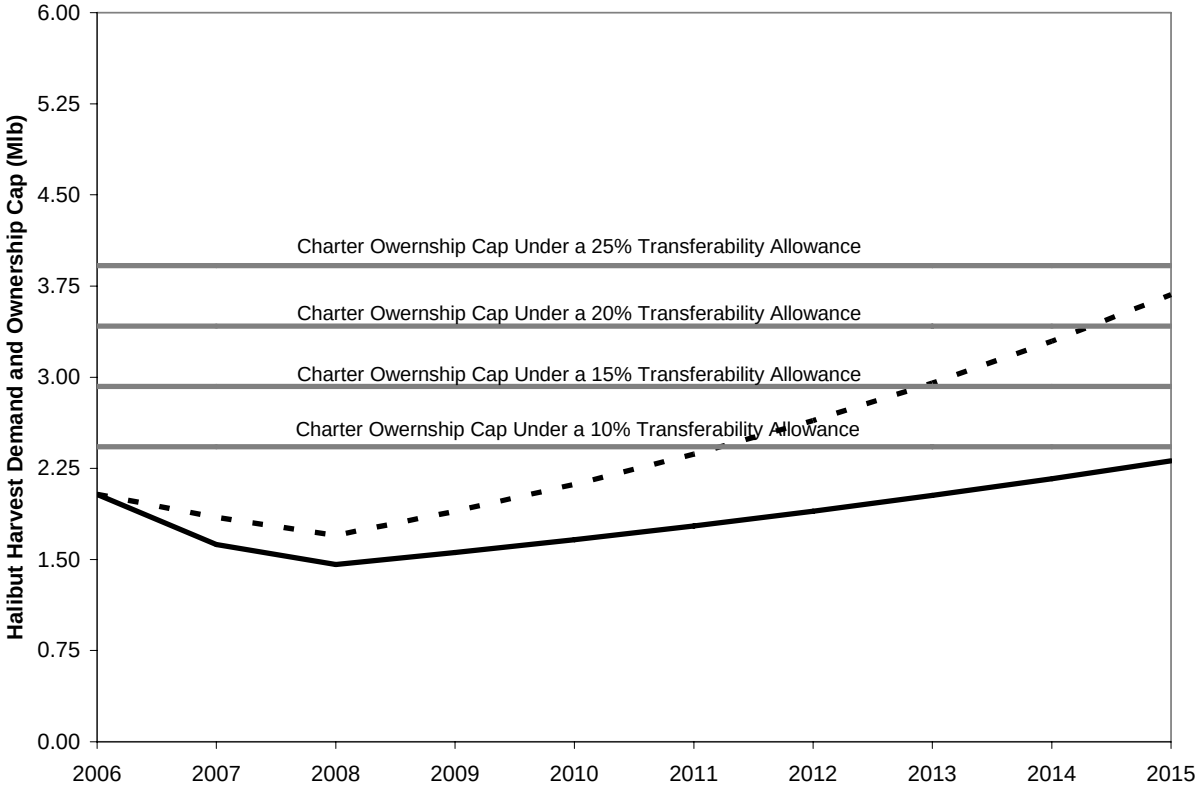

Figure 9 Estimated Timeframe for the Transferability Allowances to Cap Charter Sector Growth, Area 2C

Source: NEI Estimates, 2007.

In Area 3A, the analysis projects that a 10% transfer allowance cap would restrict charter harvest after 2015 given the current status quo and assuming higher growth rates (see Table 48 and Figure 10).[47] The analysis accounts for ADF&G's 2007 emergency order banning skipper and crew harvests and again uses a lower and higher growth rate based on growth rates between 1995 and 2006 and over the last five years. Charter harvest growth has averaged 3% over the longer term and just over 4% over the last five years As in Area 2C, any limit on the amount that can flow between the sectors will likely restrict charter industry growth.

[47] The status quo does not reflect any of the Area 3A management measures considered under (NPFMC 2007c) given the development nature of that management measure.

Table 48 Minimum Transferable Needs Based on Projected Charter Harvest Growth, Area 3A

Year	Projected Charter Harvest Mlb)		Required Transfer Amount (Mlb)		Minimum Transfer Percentage Needed	
	Low Average	High Average	Low Average	High Average	Low Average	High Average
2006	3.947	3.947	0.297	0.297	10%	10%
2007	3.635	3.696	-0.015	0.046	10%	10%
2008	3.745	3.871	0.095	0.221	10%	10%
2009	3.858	4.054	0.208	0.404	10%	10%
2010	3.975	4.246	0.325	0.596	10%	10%
2011	4.095	4.447	0.445	0.797	10%	10%
2012	4.219	4.657	0.569	1.007	10%	10%
2013	4.346	4.878	0.696	1.228	10%	10%
2014	4.477	5.109	0.827	1.459	10%	10%
2015	4.613	5.351	0.963	1.701	10%	10%

Source: NEI Estimates, 2007.

Figure 10 shows that a transferability allowance would eventually cap charter growth in Area 3A, but not nearly as quickly as in Area 2C. The solid black line reflects harvest growth based on slower, long-term growth rates, while the dotted black line shows growth projected using faster, recent growth rates. The gray lines denote the approximate level use caps that would result from the suboptions discussed above. The point at which the black lines cross the grey lines shows when the analysis projects that each transferability allowance would cap charter sector growth.

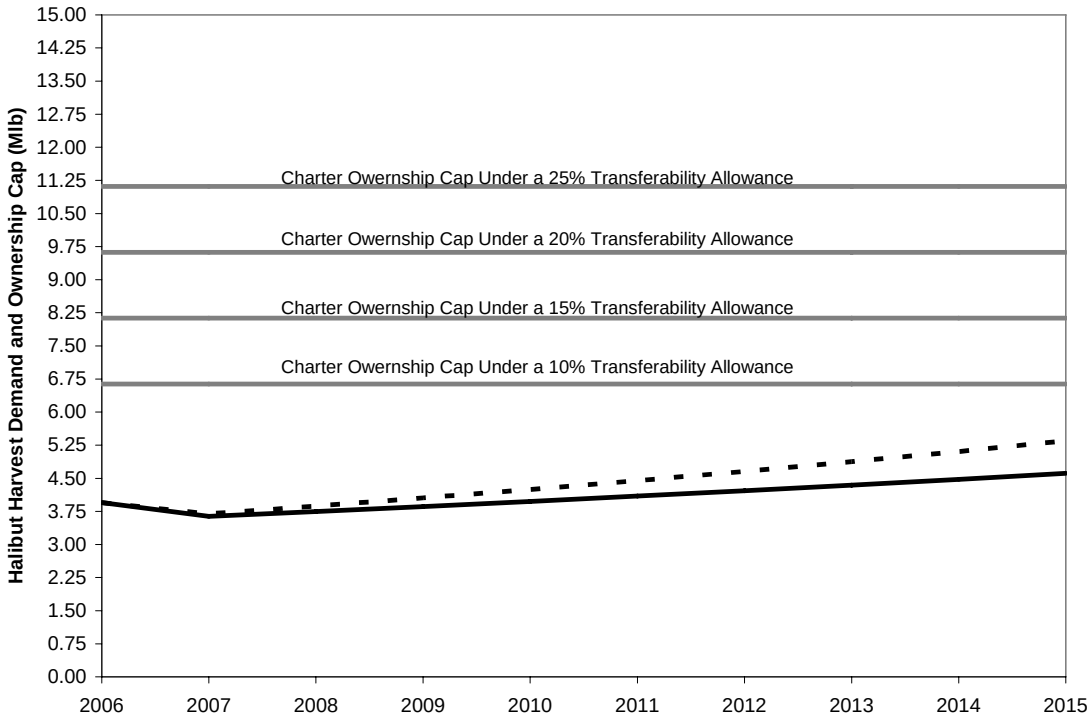

Figure 10 Estimated Timeframe for the Transferability Allowances to Cap Charter Sector Growth, Area 3A Source: NEI Estimates, 2007

Limits on the amount of transferable QS could result in several issues under a common pool management regime. First, the limits could result in shortened seasons for charter operators if the common pool utilized the maximum amounts allowed under the suboptions and total CEY dropped between years. Under this scenario, the charter fleet would be faced with lower harvest than it had used in prior years and no ability to step into the market to pay for more QS to make up the difference. This scenario could result in closures of the charter halibut fishery as the ability of common pool managers to limit the harvest of individual charter operators will likely be negligible. At the same time, under this scenario QS holders wishing to leave the fishery when their QS were are maximum value would receive a lower price than if charter operators were allowed to come into the market. Thus, limits on transfer allowance limit the flexibility of common pool managers and QS holders wishing to sell when their QS units hold the maximum value.

Element 2.2 Limits on Purchase

Element 2.2 defines restrictions on the amount and type of QS that the common pool could purchase based on either an annual percentage of QS historically transferred and/or restrictions on vessel class sizes and QS blocks. Element 2.2 states:

> Option 1. Limited annually to a percentage (30%–50%) of the average amount of QS transferred during the previous five years.
>
> Option 2. Restrictions on vessel class sizes/blocked and unblocked/ blocks above and below sweep-up levels to leave entry size blocks available for the commercial market and to leave some larger blocks available for an individual trying to increase their poundage.
>
> Note: (These options are not intended to be mutually exclusive.)

The June 2007 motion states that Option 1 and Option 2 for purchasing QS are not mutually exclusive; limits on QS purchase could be based on a percent of historical QS transfers and/or the vessel class sizes. Irrespective if one or both options are enacted, the core of question regarding Element 2.2 is "will there be enough QS available so halibut charter operators are able to meet their customers' halibut catch demand?" The analysis finds that:

- The charter fleet will need to purchase an amount of QS equal to a significant portion of the average annual trading volume in the QS marketplace. The magnitude of this need will depend on factors such as the initial allocation, growth in the charter sector, and the QS-to-TAC conversion ratio.
- The QS needs of the charter fleet are large enough that they will likely drive QS prices upwards.
- Any restrictions on the annual volume of common pool purchases of QS could result in a "phased-in" initiation of the program. This situation would be difficult for the charter sector under a hard allocation, because the common pool would not have enough QS to cover demand, which could result in the need for an in-season closure. It would also prolong initial price effects associated with the proposed program.
- Entry-level commercial fishermen are the most likely to be negatively affected by the increasing QS prices. At the same time, existing commercial QS holders will benefit from the increased demand for their shares and the speculative pricing pressures that will likely result as the program takes shape. It is unclear how much preventing the charter fleet from purchasing Class D shares will protect entry-level commercial fishermen, because increasing prices for non-Class D shares could make Class D shares more attractive to existing fishermen with small vessels.

Option 1: Annual Purchase Limits

Option 1 states that total annual common pool purchases would be equal to a percentage (30%–50%) of the average amount of QS transferred during the five years prior to 2006. Table 49 shows the number of QS units transferred during from the five years previous to 2006 as reported by NMFS RAM Program, the annual average during this five year period (2001-2005), and the annual limit at 30% and 50% of the five year annual average. Under 2006 conditions and restrictions there would have been between 1.4 and 2.3 million QS available for the common pool to purchase in Area 2C and between 3.4 and 5.7 million QS available for purchase in Area 3A.

Table 49 Annual and Average QS Units Actively Traded

Year or Average	QS Units	
	Area 2C	Area 3A
2001	4,976,169	13,931,596
2002	5,220,906	11,566,215
2003	4,676,166	10,713,943
2004	4,250,008	12,444,531
2005	4,883,767	7,975,312
Total	24,007,016	56,631,597
Annual Average (2001-2005)	4,801,403	11,326,319
30% of Average	1,440,421	3,397,896
50% of Average	2,400,702	5,663,160

Source: NEI Estimates, 2007 based on http://www.fakr.noaa.gov/ram/ifqreports.htm.

The analysis projected future charter harvests through 2015 using the current status quos for Area 2C and Area 3A.[48] The analysis converted projected future demand into QS demand by subtracting the current GHL from the projected charter harvests and converting the required pounds of halibut into QS using the 2007 QS conversion factor from NMFS RAM Program[49]. Table 50 shows estimated projections of QS needs based on projected charter harvests under the current status quo for each IPHC Area. In 2006, the charter industry of Area 2C would have needed to purchase 3.38 million QS units, while in Area 3A the common pool would have needed 2.18 million QS units. In both Areas, 2007 needs would likely be lower because of State Emergency Orders and Federal regulatory changes (Area 2C only).

It is likely that the reallocation program would not begin for a few years. If the program is not implemented until 2010, QS needs will be above the annual 2001-2005 trading average in Area 3A and around the 2001-2005 trading average in Area 2C (See Table 50).

- In Area 3C in 2010, charter operators would need between 2.29 and 4.2 million QS units under the current status quo. As shown in Table 41, trading in Area 3A provided an average of 11.32 million QS units available annually. Under a 30% trading restriction there would only be 3.40 million QS available and at the 50% level there would be 5.66 QS units available.

[48] As previously noted, the projections use the long-term (i.e., 1995-2006) industry growth rates to create a lower expectation of future harvests and the five-year (i.e., 2001-2005) average growth rates to create a higher projection for future harvests.

[49] 2006 QS needs are calculated using the 2006 QS values found at http://www.fakr.noaa.gov/ram/06pooltac.pdf

- In 2010, Area 2C charter operators would need between 1.61 and 4.80 million QS units while the current long-term trading patterns would provide between 1.44 million QS at the 30% level and 2.40 million QS at the 50% level.[50]

Thus, there is a strong likelihood that a 30% trading restriction would make it difficult to initiate the program in one-year in both Areas while the 50% trading restriction would likely prolong implementation in Area 2C. The scenarios described above only fit if the initial allocation is equal to the GHL. Allocations higher than the GHL have the potential to mitigate the problem of prolong implementation.

Table 50 Charter Fleet QS Estimated One-Time Purchase Needs, 2006-2015

	Projected QS Units Needed (Millions of Units)			
	Area 2C		Area 3A	
Year	Low Average	High Average	Low Average	High Average
2006	3.378	3.378	2.179	2.179
2007	1.330	2.897	-0.104	0.322
2008	0.176	1.859	0.671	1.557
2009	0.870	3.247	1.469	2.851
2010	1.612	4.797	2.292	4.205
2011	2.404	6.529	3.139	5.624
2012	3.250	8.462	4.012	7.110
2013	4.154	10.621	4.912	8.666
2014	5.119	13.033	5.839	10.296
2015	6.150	15.726	6.793	12.003

Source: NEI Estimates, 2007

Charter harvests are expected to grow over time under the current status quos. As time passes the difference between the initial allocation and the needs of the charter fleet will change as the allocation is fixed but the needs of the fleet are likely to increase. Table 51 shows the charter sector's project QS needs as a percentage of the annual 2001-2005 trading volumes. This table assumes initial allocations equal to the current GHLs. The longer it takes to initiate a compensated reallocation program the greater the charter sector's needs relative to the QS markets average annual trading volumes.

The volume of QS needed to cover reallocation is great enough that both the common pool and the commercial industry should reasonably expect significant QS price effects associated with the compensated reallocation. In particular Area 2C's QS needs by 2010 have the potential to be greater than recent annual transfer totals. The compensated reallocation will greatly expand the demand for QS (depending on the initial allocation) and is likely to make QS more expensive for all market participants. While this price increase will be an issue for new market participants, the compensated reallocation could result in a significant increase in the value of QS held by current commercial operators. So, while entering operators could be harmed, existing operators could expect to benefit substantially.

[50] These estimates assume the proposed regulations for 2008 stay in effect. If Area 2C reverts to the regulatory regime which existed in 2006 then the common pools QS needs will exceed the 30-50% range for recent trading patterns.

Table 51 Charter Fleet QS Estimated One-Time Purchase Needs as Percentage of the 2001-2005 Trading Volume, by Area

	Area 2C		Area 3A	
Year	Low Average Growth	High Average Growth	Low Average Growth	High Average Growth
2007	27.7%	60.3%	0.0%	2.8%
2008	3.7%	38.7%	5.9%	13.7%
2009	18.1%	67.6%	13.0%	25.2%
2010	33.6%	99.9%	20.2%	37.1%
2011	50.1%	136.0%	27.7%	49.7%
2012	67.7%	176.2%	35.4%	62.8%
2013	86.5%	221.2%	43.4%	76.5%
2014	106.6%	271.4%	51.5%	90.9%
2015	128.1%	327.5%	60.0%	106.0%

A decline in the TAC value of QS units could exacerbate the situations described above by increasing the number of QS units needed to harvest a pound of halibut. Each QS unit represents a fraction of a pound, and the units are changed annually based upon harvest levels for the halibut stock. Figure 11 shows the number of QS units needed for one pound of halibut in areas 2C and 3A from 2001 through 2006. The number of QS units needed to control one pound of halibut in Area 2C increased substantially between 2006 and 2007 from 5.6023 units to 6.9979 units.

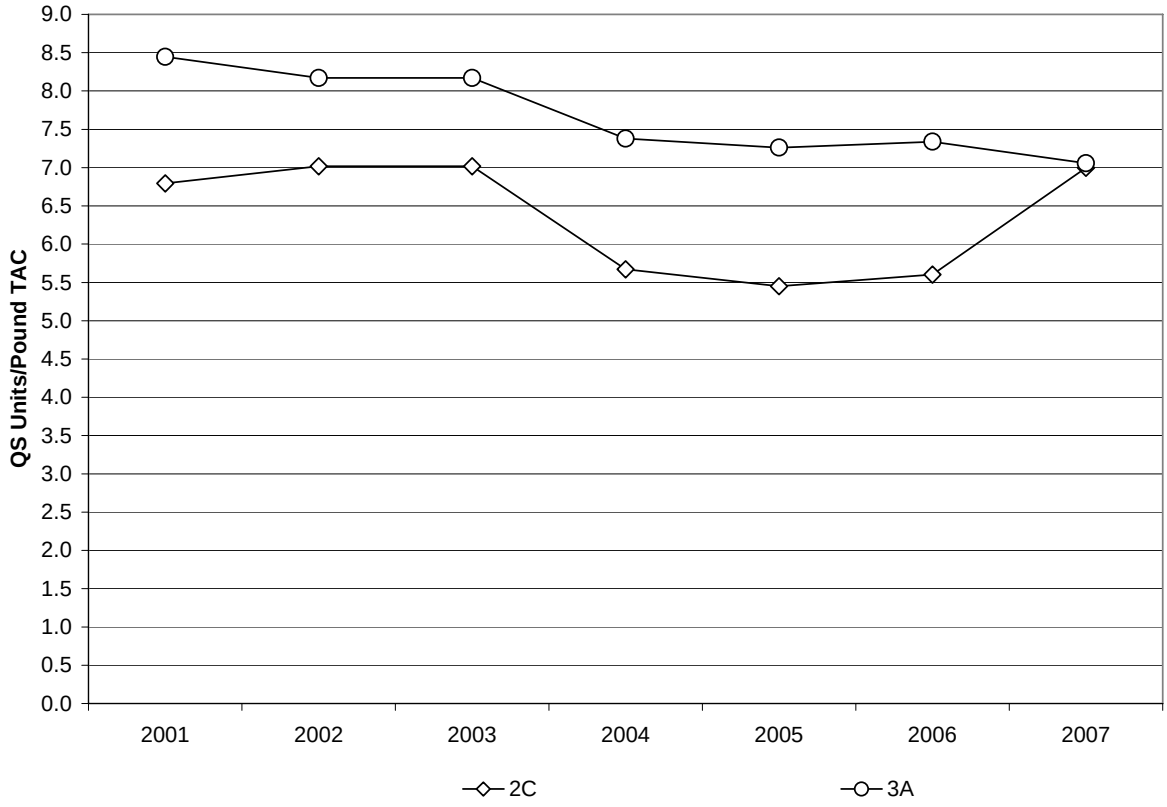

Figure 11 QS Units Needed per Pound of Halibut IFQ, 2001 through 2006
Source: NMFS RAM Program, 2007

Option 2: Cap and Block Restrictions

Option 2 would place restrictions (as yet unspecified by the Council) on the common pool based on vessel class sizes and blocks. The stakeholder committee included this provision to leave some larger blocks available for individuals trying to increase their poundage. Table 52 and Table 53 show the percentage of transfers from 2001-2006 that occurred in each vessel class and in the unblocked/blocked categories. The charter industry's QS needs represent a significant portion of the annual QS transfer volume, and the common pool's entry into the current marketplace would likely result in price effects. Any reductions in the potential trading pool associated with vessel classes or blocked/unblocked shares would result in increased price effects and result in the common pool taking several years to purchase the needed shares.

Table 52 QS Units Traded by Vessel Class, 2001 through 2006

Vessel Class	2001	2002	2003	2004	2005	2006
			Area 2C			
A	0%	3%	0%	0%	0%	1%
B	20%	14%	13%	13%	10%	10%
C	67%	68%	68%	69%	76%	82%
D	13%	15%	20%	18%	14%	7%
Total QS Traded Units	4,976,169	5,220,906	4,676,166	4,250,008	4,883,767	4,184,763
Vessel Class			Area 3A			
A	2%	0%	2%	1%	0%	0%
B	32%	30%	26%	28%	23%	31%
C	58%	55%	59%	60%	60%	60%
D	8%	15%	14%	11%	16%	9%
Total QS Traded Unit	13,931,596	11,566,215	10,713,943	12,444,531	7,975,312	8,879,089

Source: NEI Estimates, 2007

Table 53 Blocked and Unblocked QS Units, 2001 through 2006

Category	2001	2002	2003	2004	2005	2006
			Area 2C			
Block units	80%	68%	82%	69%	71%	77%
Unblocked units	20%	32%	18%	31%	29%	23%
Total Units	4,976,169	5,220,906	4,676,166	4,250,008	4,883,767	4,184,763
			Area 3A			
Block units	42%	51%	58%	52%	49%	53%
Unblocked units	58%	49%	42%	48%	51%	47%
Total Units	13,931,596	11,566,215	10,713,943	12,444,531	7,975,312	8,879,089

Source: NEI Estimates, 2007

As stated, commercial operators have expressed concern that common pool buying could limit the availability of Class D shares for entry level commercial fishermen. Class D shares are the least expensive QS units and are designated for catcher vessels less than 35 feet in length. It would be logical for the common pool to pursue these shares, since it would place the lowest financial burden on charter operators. A reliance on purchasing these shares would temporarily disrupt the availability of shares to entry-level commercial fishermen because of the limited availability of Class D shares, and would likely increase the price for these shares in the long-run. While entry-level commercial operators have the ability to take advantage of "fish down" by purchasing shares for larger vessels and fishing them on Class D vessels, the cost of these shares is substantially higher than the cost of Class D shares. As shown in Table

52, Class D QS units comprised between 13% to 20% of annual QS units available for purchase between 2001 and 2006 in Area 2C. In Area 3A, Class D QS units comprise 8% to 16% of annual QS units available for purchase. Given the situation described in Option 1, it is clear that the common pool would be unable to purchase enough QS shares from the regular annual Class D trade to "fully fund" the common pool, and that commercial operators are justified in their expectations of price effects given the size of the charter industry's QS needs.

Element 2.3 Limits on Leasing

Element 2.3 contains a limit on common pool leasing back to the commercial sector (Item A) and a limit on leasing by commercial fishermen to the charter sector(Item B). These are not mutually exclusive and read:

A The common pool may only lease 0%–15% of holdings back to the commercial sector.

B. Individual commercial fishermen:

i. Commercial fishermen who do not hold a sport fishing guide business license and/or moratorium permit may lease up to 10% of their annual IFQs for use as GAF on an individual basis, or to a common pool.

ii. Commercial fishermen who hold QS and a sport fishing guide business license and/or a halibut moratorium permit may convert all or a portion of their commercial QS to GAF on a yearly basis if they own and fish it themselves on their own vessel. Commercial and charter fishing may not be conducted from the same vessel during the same day.

Limits on Common Pool Leasing

Item A in Element 2.3 stated above is intended to prevent an "absentee landlord" scenario where the charter sector buys more QS than it can reasonably use in the foreseeable future and then leases the unusable QS back to the commercial sector at a profit. At this point, there are limited quantitative arguments that can be made while discussing this element. However, there are several important qualitative arguments/points as identified below:

- Under common pool management, the common pool manager will likely want to hold enough QS to ensure that the charter sector can harvest what charter clients demand without fear of activating a season closure or post-season penalties for exceeding allowed harvest levels.
- How much extra QS is needed in any given year to accommodate expected industry growth and provide a buffer in the case of emergencies? The amount the common pool manager will want to hold will depend on the opportunity cost of holding extra QS. In a scenario where there is no limit on leasing, the common pool manager may be less concerned about having extra QS because those QS could be leased back to the commercial sector. Limits on leasing place an additional opportunity cost on QS units above the leasing limit held by the charter industry. The common pool would be holding these QS (and likely making financing payments on them) without any way to generate revenue from them either through leasing or harvest by charter clients.
- If leasing is disallowed altogether, the common pool manager will face the choice of (a) entering the spot market near the end of the charter season to purchase halibut in the case of shortfalls, or (b) holding more QS than will likely be needed in a given season to avoid entering the QS market at the end of the season. The first choice lowers the opportunity cost of carrying too much QS, but carries the risk of paying high prices in the QS market as a "motivated" buyer. The second choice

would increase the "carrying cost" associated carrying extra QS, but would avoid issues with in-season management and having to enter the QS market on short notice.

As noted in prior analyses such as NPFMC (2007b) and NPFMC (2007c), growth in the charter harvests is not a linear upward trend. Growth rates vary highly from year to year. Recent and reasonably foreseeable changes in management such as preferred alternatives in NPFMC (2007b) and the passage of a moratorium on new entrants in NPFMC (2007a) will likely change or moderate growth patterns. The common pool manager will face the difficult challenge of predicting year-to-year growth under a regime where individual boats are not incentivized to limit their harvests.

Limits on Commercial Fishermen

Item B in Element 2.3 contains two leasing allowances for commercial fishermen. As described in Element 2.2: Limits on Purchase, the QS needs of the common pool are likely to be equivalent to a significant portion of the commercial QS market's average annual trading volume. A limit on the amount the common pool could purchase in a single year could result in a shortfall between the amount held by the common pool and the amount of QS needed to meet charter angler demand. Allowing commercial fishermen to lease to the common pool could provide enough QS to meet this shortfall.

The first allowance applies to those who do not hold a sport fishing guide business license and/or moratorium permit. It would permit qualifying fishermen to lease up to 10% of their annual IFQs for use as GAF on an individual basis, or to a common pool. This allowance could provide the market with important liquidity during the formative years of a sector transfer mechanism. A primary concern of commercial fishermen has been the potential for market distortions if the common pool enters the market and attempts to purchase all of the QS need by the charter sector in a short time period. Options 1 and 2 of Element 2.2 may limit the amount the common pool may purchase and, as noted in that section, these limitations may restrict the amount the common pool could purchase in the first year of operation to less than what is needed by the charter sector during that first year. The leasing allowance described above could provide more than 500,000 pounds in Area 2C and approximately 2 Mlb in Area 3A under 2006 conditions. More precise estimates cannot be made without knowing which charter operators hold QS.

The leasing allowance would also provide a "safe harbor" for the common pool to go to if the pool's QS holdings were not enough to cover the charter sector's expected catch for a given year. The common pool manager could engage in several short-term leases as a lower cost mechanism of avoiding in-season management restrictions caused by the potential shortfall.

The second allowance (Item B) would allow operators who participate in both fleets to help provide QS to the common pool. This option may be particularly important given the potential magnitude of the QS shortfall. The data necessary to quantify the total amount of QS held by commercial fishermen who fall into this category are currently lacking.

Option 2: Individual Management

Option 2 of Alternative 2 creates a system where individual charter operators would purchase the QS units from commercial QS holders and convert these shares into GAF. The authors note that unless the charter industry's initial allocation is allocated to individual charter operators, this option results in a system where the industry's initial allocation is held in common and then once that allocation is used during a season, operators switch over to fishing with their individual QS. In both a hybrid system and the common pool system, charter operators would race for fish within the common pool. In the hybrid system, this race would result in some operators having an incentive to deplete the pool as quickly as possible to eliminate the competition from operators who do not have the resources to purchase QS. If this

option is not meant to be a hybrid system, then a crucial step of this option is the division of the charter sector's initial allocation between individual charter operators. A charter operator can only determine how many QS units they need to buy if they know the difference between how many fish they will need in order to operate their business and how many fish they already have the right to harvest.

Element 1.1 Method of Funding

Under this option, eligible individuals would purchase commercial halibut QS/IFQ for use in the charter halibut fishery. As discussed in Section 2.6, this option would require the promulgation of new regulations under the Northern Pacific Halibut Act. Without regard to the overarching issue of individual charter operators' initial allocations, this option is the simplest method of re-allocation, as the QS purchases are just between two individuals—a seller and a buyer—at the current market price. This option leaves decisions to individuals in the marketplace and does not require public funding or any substantial increase in bureaucracy. Each individual charter operator is allowed to develop his/her own business plan independently of other charter operators. Providing each charter operator an opportunity to optimize the size of their particular allocation by purchasing or selling QS may be the most efficient method of allocating QS between the commercial and charter sectors. By providing individual charter operators the ability to assure themselves of sufficient fish to meet the needs of their clients, an individual allocation scheme would help avoid the shortages (or surpluses) of fish that may occur under a common pool arrangement.

Loans are likely to be an important source of the initial capital required to purchase QS. A loan would have to originate from a Federal, state, or private source. As noted above, program such as the North Pacific Federal Loan and CFRLF would require legislative changes to make charter operators eligible for the program. Another important source of financing is personal, private funding.[51] Personal resources were the most widely used method used to finance commercial halibut QS transferred in "priced sales" transactions in 1995-1998. In Areas 2C, 3A, 3B, 4A and 4B, personal resources were reported as a source of financing far more often than the next most significant financing source. In all of these areas, personal financing was mentioned in connection with over 60% of the QS transferred. Personal resources were also the most important financing sources in Areas 4C and 4D, although by smaller margins than in other areas (Dinneford et al. 1999).

The authors note that it may not make sense to have the method of funding defined as something the Council selects under an individual management regime. For example, not every operator will want to use a loan program. If the basis of the individual management is that individual operators purchase an amount of QS that best suits their business, then it should also stand that individual operators should use the financing program that best suits their individual business as well.

Element 1.2 Revenue Stream

Under an individual management regime, the revenue stream for paying back any debt financing of QS purchases will come from the individual operator's business. The revenue stream required to repay debt will depend on factors such as the size of the debt, the interest rate, and the repayment period. The size of the debt will depend on how much QS individual operators will need to purchase. The amount needed to be purchased will depend on the characteristics of the individual operator's business and how the sector's non-compensable allocation (i.e., the amount of allocated halibut harvest for which the charter sector does not have to compensate the commercial sector) is divided between qualifying moratorium permit holders.

[51] We note that this method of funding could be used by an eligible individual, corporation, partnership, or other entity (including a non-profit corporation modeled after a Regional Aquaculture Association or Regional Seafood Development Association; for example, association members could pool their cash resources).

If the non-compensable allocation is equal to the current GHL and this allocation is split equally amongst moratorium permit holders, then the "average" individual operator would need to charge a per client per day fee of between $10 and $20 in both Areas depending on the initial allocation and the terms of the allocation's financing. If these charges were passed onto the client, they would raise the direct charter fee by between 5% and 15% given the current price range for charters. Any increase in charges may affect demand. However, anglers may also realize that such a fee is the only way they can guarantee continued access to the fishery to which they have become accustomed.

Operators could also choose to charge clients on a "per fish" basis or on a "pounds harvested" basis. Individual operators will likely compete and offer different rate structures that attract different clients. For example, an angler interested in harvesting the largest fish may prefer a fee that is embedded in the overall price of a trip. At the same time, an angler interested in catch and release fishing may prefer an operator who charges a surcharge based on "pounds harvested." Operators will likely experiment over the initial seasons to see what rate structure works best since these fees will not be Federally regulated.

Element 2.1 Limits on Transferability

Element 2.1 limits the amount of halibut QS that can be transferred between the commercial and charter fleets. The limits create a minimum and maximum size of either sector's harvest. However, given the long-term growth in the charter industry, the likely net effect of this provision would cap the maximum size of the charter fleet's harvest while creating a floor under the percentage of total harvest that the commercial fleet could access. The element defines the percentage of the combined commercial and charter catch limit that would be available for transfer between the sectors at: Option 1) 10%; Option 2) 15%; Option 3) 20%; or Option 4) 25%. The analysis does not predict different growth rates for the charter fishery under an individual management regime and a common pool management regime. Thus, the estimates of when the various suboptions would begin to limit charter harvest do not vary between the common pool and individual management regimes. However, there are several important functional differences in how charter operators may behave under these two regimes. These differences have both positive and negative effects for both industries.

An individual management regime would require individual charter operators to make business decisions similar to those that commercial halibut operators make. The limits on transferability will affect the ability of individual operators to make these decisions. Under an individual management regime, each charter operator must decide if they will profit more by using halibut QS to harvest GAF or by selling their halibut QS to the commercial fleet. If a majority of charter anglers decided to sell their QS back to the commercial fleet, then a transferability limit would cap the amount that could be sold back to the commercial fleet and place a floor on the size of the GAF pool held by the charter fleet. These transferability limits can also affect individual operators who wish to increase their GAF holdings. For example, if the charter fleet as an aggregate holds the maximum allowed under a suboption, the individual operator would be forced to buy only from another charter operator instead of all QS holders.

One benefit of the individual management regime is that it allows greater flexibility under the transferability limits in times of falling CEY. For example, assume the charter fleet, in aggregate, owns the maximum allowed under the transferability limit when CEY falls from one year to the next. In a declining CEY situation, the amount that operators could harvest would fall to a level below that to which the sector had fallen in the previous year(s). Under common pool management the operators would either face an early season closure or a State Emergency Order designed to reduce harvest levels. On the other hand, individual operators could decide when to use their GAF on paying customers. Marginal operators might find that their GAF are worth more as QS in the commercial sector and decide not to convert them to GAF. Under individual management, individual charter operators will likely behave in the same manner as commercial operators—they would fish when price, weather, and other factors provided them

the best opportunity to maximize their profits. While the individual management regime would not change the fact that the limits on transferability are a de factor cap on the charter industry, this type of regime would allow individual operators to mitigate the worst effects of this cap during a falling CEY scenario.

Element 2.2 Limits on Purchase

Cap and block measures are cornerstones of the IFQ Program established for halibut (and sablefish) fishers in 1995. Overall, the IFQ Program aims to protect small producers, part-time fishery participants, and entry-level participants, while preventing the fishery from being dominated by large boats or a particular vessel class. Use caps are meant to control total catch amounts without severely reducing the fishing fleet size (Gharret, 2007). When cap restrictions were originally enacted, NMFS assigned QS to vessel categories based on number of years fished and historical catch (Pautzke and Oliver 1997). Quota shares were also specified by vessel class: either freezer longliners or catcher boats. Vessel QS categories were further subdivided by vessel length. The Council established this system to forestall a full-scale reorganization of the fleet, which could have resulted in large vessels out-competing smaller vessels that operate out of smaller communities

Block restrictions were developed to ensure that entry level fishermen are able purchase quota and enter the halibut fishery. Initial halibut IFQ allocations of 20,000 pounds or more in the first year of the program (1995) were issued as regular quota shares (Pautzke and Oliver, 1997). All initial allocations that would result in IFQs less than 20,000 pounds were issued as QS blocks. Transfer provisions and use caps were placed on the QS blocks to prevent over-consolidation of the QS in the fleet. Blocks of QS representing IFQs of less than 1,000 pounds in the initial allocation could be combined or "swept up" to form larger blocks, as long as the consolidated block created would be no greater than 1,000 pounds. Effective September 10, 2007 the block[52] program in Areas 2C and 3A was revised to allow a quota share holder to hold 3 blocks rather than 2 and increase the "sweep-up" level in Areas 2C and 3A from 3,000 lb to 5,000 lb. This will allow further consolidation to occur.

Current use caps allow QS holders in Areas 2C and 3A to hold up to 1% of the combined total number of QS units in Areas 2C, 3A, and 3B, of which total 2C holdings can amount to no more than 0.5% of the total QS units in Area 2C. An operator that owns the maximum number of QS within Area 2C (1%), could not purchase additional shares for fishing in area 2C. However, the operator could purchase additional QS in Area 3A under the 0.5% cap rule for areas 3A and/or 3B. If these use caps were applied to individual charter operators, it would establish an upper limit for use. Table 54 shows the number of GAF that could be used by charter operators under the specified commercial QS Use Caps using the 2006 QS conversion factor and the 2006 average harvest weight. In Area 2C, a charter operator could have controlled up to 5,642 halibut, while an Area 3A charter operator would have been able to control up to 10,662 halibut.

Table 54 Halibut Harvest Levels with 2006 QS Use Caps

Area	Quota Share Pool	Use Cap	QS per Pound of IFQ TAC	Controlled Harvest Weight (lb)	Ave. Weight of Halibut by Area (lb)	Equivalent GAF
2C	59,979,977	599,799	5.6023	107,063	18.976	5,642
3A	300,564,647	1,502,823	7.7338	194,319	18.226	10,662

Source: NEI Estimates, 2007.

[52] A block is a combination of quota shares that must be held or transferred together and cannot be broken apart.

Element 2.3 Limits on Leasing

Element 2.3 contains limits on leasing for individual charter operators and individual commercial fishermen. The sub-sections below describe the analyzed limits for each sector.

Individual Charter Operators

The motion contains three options for limiting the leasing of QS by individual charter operators. The options would allow limited leasing with an individual allowed to control a combined amount of leased and held fish subject to an overall cap. Options 1 and 2 are mutually exclusive, but neither is mutually exclusive with Option 3. The options are:

- Option 1. an individual may not hold or control more than the amount equal to the current setline use cap converted to the number of fish in each area (currently 1% of the setline catch limit in Area 2C or 0.5% in Area 3A)
- Option 2. an individual may not hold or control more than 2,000, 5,000, or 10,000 fish.
- Option 3. charter operators may lease up to 10% of their QS back to the commercial sector

Both Option 1 and Option 2 would place a limit on the number of GAF that an individual charter operator could hold or control. In order to help quantify the effects of these limits, the analysis requested that ADF&G determine the number of businesses that would have qualified for moratorium permits based on NPFMC (2007a). There were a total of 369 qualifying permits in Area 2C and 466 qualifying permits in Area 3A. More than 95% of the businesses in both Areas harvested less than 2,000 halibut in 2006.

Table 55 Distribution of Moratorium Permits by Number of Halibut Harvested in 2006

2006 Halibut Harvested	Area 2C Qualifying Permits		Area 3A Qualifying Permits	
	N	*%*	N	%
0-1,999	363	98.4	444	95.3
2,000-4,999	5	1.4	17	3.7
5,000-9,999	0	0.0	3	0.6
>= 10,000	1	0.2	2	0.4
Total	369	100.0	466	100.0

Source: ADF&G, 2007.

Option 1 limits permit holders to no more than the amount equal to the current setline use cap converted to the number of fish in each area (currently 1% of the setline catch limit in Area 2C or 0.5% in Area 3A). As shown in Table 54, this limit in 2006 was equal to 5,642 halibut in Area 2C and 10,662 halibut in Area 3A. In Area 2C, this limit would affect one estimated permit holder that harvested more than 10,000 halibut. The remaining 368 estimated permit holders harvested less than 5,000 halibut. This option would not affect any businesses in Area 3A as all 466 estimated permit holders harvested less than 10,000 halibut.

Option 2 contains three suboptions, which limit permit holders to no more than 2,000, 5,000, or 10,000 fish. The effects of these suboptions are:

- The 2,000 fish limit would affect 1.6% of estimated permit holders in Area 2C and approximately 4.7% of estimated permit holder in Area 3A. The analysis notes that this option conflicts directly with the Option in Element 2.2 which would allow 5,642 halibut in Area 2C and 10,662 halibut in Area 3A. The authors note that such a low limit would prevent industry consolidation. While consolidation has some negative effects when the number of players becomes too small, a

measure of consolidation can allow industry to become more efficient resulting in higher consumer and producer surplus. The 2,000 fish limit may also effectively limit future charter industry growth is a high portion of the estimated permit holders currently operating below the limit are operating very near the limit. For example, if a large number of the permit holders are harvesting 1,900 fish annually, then their ability to grow is quite limited. While these numbers were not available for this analysis, ADF&G may be able help quantify the potential for this effect by calculating the median and average number of fish harvested for permit holders below the 2,000 fish limit.

- The 5,000 fish limit would affect just one estimated permit holder in Area 2C and five estimated permit holders (i.e., 1% of the total) in Area 3A. The analysis notes that this option conflicts directly with the Option in Element 2.2, which would allow the harvest of 5,642 halibut in Area 2C and 10,662 halibut in Area 3A. As the vast majority of the estimated permit holders in both areas harvest less than 5,000 halibut annually, this suboption would not have the same "anti-consolidation" or anti-growth effects as the 2,000 fish limit.
- The 10,000 fish limit would affect one estimated permit holder in Area 2C. This option would not affect any businesses in Area 3A as all 466 estimated permit holders harvested less than 10,000 halibut. The analysis notes that this option conflicts directly with the Option in Element 2.2 for Area 3A as that option would allow permit holders to "own" QS equal to 10,662 halibut in Area 3A. As most of the estimated permit holders in both areas harvest less than 2,000 halibut annually, this suboption would not have the same "anti-consolidation" or anti-growth effects as the 2,000 fish limit.

Option 3 is not mutually exclusive with Option 1 or Option 2. This option would allow charter operators owning QS to lease up to 10% of their QS back to commercial sector. This option effectively limits the incentive for individual charter operators to hold more QS than they can reasonably use while at the same time allowing them to lease some QS back to the commercial sector when the value of QS is higher when used for commercial purposes or when the charter operator is unable to harvest all of the QS they own during the charter season. An economic concern of this limitation is that charter demand drops for a year or two because of an economic recession, charter operators might be forced to sell their QS as opposed to using their QS to create a short-term revenue stream to ride out the economic downturn.

Individual Commercial Fishermen

As with the common pool, Item B in Element 2.3 contains two leasing allowances for commercial fishermen. These options would allow commercial fishermen to engage in limited leasing, which could help the charter sector as it transitions to an individual management regime. The options are:

- Option 1. Commercial fishermen who do not hold a sport fishing guide business license and/or moratorium permit may lease up to 10% of their annual IFQs for use as GAF on an individual basis, or to a common pool.
- Option 2. Commercial fishermen who hold QS and a sport fishing guide business license and/or a halibut moratorium license may convert all or a portion of their commercial QS to GAF on a yearly basis if they own and fish it themselves on their own vessel. Commercial and charter fishing may not be conducted from the same vessel during the same day.

The first options applies to those who do not hold a sport fishing guide business license and/or moratorium permit and would permit these fishermen lease up to 10% of their annual IFQs for use as GAF on an individual basis, or to a common pool. It could provide the market with important liquidity during the formative years of a mechanism allowing QS exchanges between sectors. A primary concern

of commercial fishermen has been the potential for market distortions if the common pool enters the market and attempts to purchase all of the QS need by the charter sector in a short time period. Options 1 and 2 of Element 2.2 may limit the amount the common pool may purchase and as, noted in that section, may restrict the amount the common pool could purchase in the first year of operation to less than what is needed by the charter sector during that first year. The leasing allowance described above more than 500,000 pounds of IFQ TAC in Area 2C and approximately 2 Mlb in Area 3A under 2006 conditions. The analysis does not have the data required to make more precise estimates at this time.

The leasing allowance would also provide a source for the common pool to go to if it ran into the situation described above in which QS holdings are not enough to cover the charter sector's expected catch for a given year. The common pool manager could engage in several short-term leases at a lower cost to avoid an in-season closure caused by the potential shortfall.

The analysis lacks the data necessary to quantify the total amount of QS held by commercial fishermen who would qualify under Option 2.

Implementation Issues

The suite of alternatives contains a series of "implementation issues" associated with the compensated reallocation. Some are actual issues that need to be clarified by the Council, while others reflect the intentions of the Stakeholder Committee as to how the compensated reallocation mechanisms would work. The implementations issues are noted below in italics with clarifying comments after each issue.

1. *These qualifying (ed: charter) entities may purchase commercial QS and request NMFS to issue annual IFQs generated by these shares as GAF.* This issue would apply to both the common pool and individual options and speaks to how charter TAQ would be issued in GAF not pounds.
2. *Qualified entities harvesting GAF while participating in the guided sport halibut fishery are exempt from landing and use restrictions associated with commercial IFQ fishery, but subject to the landing and use provisions detailed below.* This issue would apply to both the common pool and individual management options and would likely need to be included in any regulatory package addressing who can hold QS.
3. *GAF[53] would be issued in numbers of fish. The conversion between annual IFQ and GAF would be based on average weight of halibut landed in each region's charter halibut fishery (2C or 3A) during the previous year as determined by ADF&G. The long-term plan may require further conversion to some other form (e.g., angler days).* This issue would apply to both the common pool and individual management options and further explains the concept in Issue 1.
4. *Subleasing of GAF would be prohibited.* This issue applies only to the individual management option. Prohibiting the sub-leasing of GAF is analogous to the leasing limits in the commercial fishery and would restrict leasing between charter fishermen. Charter operators who could not use all of their GAF would have to sell QS in the open market or take advantage of the leasing provisions discussed above.
5. *GAF holders may request NMFS convert unused GAF into IFQ pounds for harvest in compliance with commercial fishing regulations provided the GAF holder qualifies under the commercial IFQ regulations.* This issue applies only to the individual management option and would allow individuals who own both charter and commercial operations to maximize their revenue within a given year subject.

[53] Charter operators would receive their allocation as GAF instead of pounds.

6. *Unused GAF may revert back to pounds of IFQ at the end of the year and be subject to the underage provisions applicable to their underlying commercial QS* . This issue applies only to the individual management option.

7. *All compensated reallocation would be voluntary based using willing seller and willing buyer.*

   Option: A pro rata reduction with compensation. A pro rata reduction would not decrease the number of QS held by an individual; rather, it would decrease the size of the total commercial pool from which IFQs are annually calculated. The effect would be similar to how a decrease in abundance affects annual calculation of IFQs, except that quota share holders would be compensated for the resultant poundage reduction of their IFQs.

   Option B: exempt category D QS from voluntary and involuntary pro rata reduction with compensation

   This issue is discussed in greater detail below.

8. *Guided angler fish derived from commercial QS may not be sold into commerce (i.e., all sport regulations remain in effect).*This issue applies to all options and provides guidance on the Stakeholder Committee's and Council's intent.

9. *Guided angler fish derived from commercial QS may not be used to harvest fish in excess of the non-guided sport bag limit on any given day*. This issue applies to the individual management option and provides guidance on the Stakeholder Committee's and Council's intent

10. *There needs to be a link between the charter business operators and the cost of increasing the charter pool. If the charter business operators do not experience the cost of increasing the charter pool, there will not be a feedback loop to balance the market system.* This issue is a problem with all of the common pool options. The Stakeholder Committee and Council recognize that systems that do not link the marginal cost and benefit of harvesting additional halibut will result in the continuance of the common pool problems that exist today.

The suite of alternatives contains a series of "implementation issues" associated with the compensated reallocation of halibut from the commercial sector to the charter sector. Some items in that section need to be addressed by the Council. Others reflect the intent of the Stakeholder Committee regarding how they intend the compensated reallocation mechanisms to work. As noted in the EA, staff recommends that these implementation issues be moved out of the alternatives and into the recordkeeping and reporting discussion or into the elements, if GAFs are the only method for using commercial QS/IFQs in the charter sector. Issue 7 should be moved as a new element under Action 2, Alternatives 2 and 3 and clarify that Option 1 also applies to in-season IFQs transfers.

New Element 1.3. Source of commercial QS/IFQs* for compensation

Option 1. All compensated reallocation would be voluntary based on willing sellers and willing buyers.
Suboption: Exempt category D QS from the compensation program

Option 2. A pro rata reduction with compensation. A pro rata reduction would not decrease the number of QS held by an individual; rather, it would decrease the size of the total commercial pool from which IFQs are annually calculated. The effect would be similar to how a decrease in abundance affects annual calculation of IFQs, except that quota share holders would be compensated for the resultant poundage reduction of its IFQs.
Suboption: Exempt category D QS pro rata reduction with compensation

*the Council should clarify whether QS (permanent) and IFQs (annual) transfers are included in the compensation program

Implementation Issue 7-The Pro Rate Reduction

The most important of these implementation issues is Issue 7; the pro rata reduction. Pro rata reduction is based on the fact that QS/IFQ are not absolute rights or interests subject to the "takings" provision of the Fifth Amendment (50 C.F.R. § 679.40(f)).[54] The Magnuson-Stevens Act provides authority to revoke, limit or modify limited access privileges, such as QS or IFQ, without compensation. Compensated reallocation is only an issue when a (hard) cap is placed on the charter sector's harvest. The status quo allows the charter sector to increase its harvest without providing compensation to the commercial sector. So, if the Council moves forward with action to cap the harvest of halibut from charter vessels, and that cap is a constraint, then the charter sector either would need to compensate the commercial sector for additional halibut harvests or successfully petition the Council to increase its allocation set under Action 1.

Section 2.6.2 provides information on when the proposed charter cap alternatives are expected to become a constraint on harvest. It also provides projections of which week the charter sector would reach its allocation in 2015. The reader is referred to that section for information on when compensated reallocation would be needed, but it is expected that the cap would be a constraint before 2015 for almost all the options considered under Action 1.

Issue 7 is the most important of the implementation issues. It addresses whether the "sale" of halibut from the commercial sector to the charter sector would happen between willing buyers and sellers or would be a compensated pro rata reduction of the halibut.

Option 1 – Willing Buyers and Willing Sellers: Transfers (sales) of QS or leases of IFQs between a willing buyer and a willing seller would occur at the QS holder level. An entity representing the charter sector (under Action 2 Alternative 2) could hold QS as a pool available to all operators or an individual charter operator (under Action 2 Alternative 3) would buy the QS to use themselves. Whether the Council allows individuals to hold the QS or some other entity, the regulations for QS use would need to be modified. The modification would need to allow individual charter operators to buy, hold, and use QS from the commercial sector, or allow a non-profit or government agency to hold QS for the charter sector to use sector. Once an agreement is reached and QS seller is compensated, the commercial QS would be transferred to the entity holding the QS for the charter sector or the individual charter operator.

An important aspect of the willing buyer and seller option is that the individuals and/or entities involved in the transaction determine the value of compensation. For a willing transfer of QS to take place one party must expect to gain and the other party must expect to be no worse off. If one or both parties are not satisfied with the market price, the transaction does not occur. Buyers or sellers remorse could occur after the sale, but at the time of the transactions both parties would need to agree to the compensation.

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[54] Sec. 303A(b) of the MSA states that a limited access privilege, quota share, or other limited access system authorization established, implemented, or managed under this Act—

(1) shall be considered a permit for the purposes of sections 307, 308, and 309;

(2) may be revoked, limited, or modified at any time in accordance with this Act, including revocation if the system is found to have jeopardized the sustainability of the stock or the safety of fishermen;

(3) shall not confer any right of compensation to the holder of such limited access privilege, quota share, or other such limited access system authorization if it is revoked, limited, or modified;

(4) shall not create, or be construed to create, any right, title, or interest in or to any fish before the fish is harvested by the holder; and

(5) shall be considered a grant of permission to the holder of the limited access privilege or quota share to engage in activities permitted by such limited access privilege or quota share.

Members of the commercial sector have indicated that compensated reallocation transactions between a willing buyer and a willing seller are imperative for the program's success. Commercial IFQ holders have stated that they do not want to be "forced" to reduce their IFQ amount as part of a pro rata compensated reallocation program. Instead they want to give persons wishing to reduce their QS holdings the opportunity to do so. Persons interested in selling their QS/IFQ would be allowed to accept the best offer. If the members of the charter sector were able to offer the highest price, the QS would flow to that sector. If another commercial harvester offered the best price, the QS would be expected to stay within the commercial sector.

To provide an estimate of the number of QS the charter sector needs to meet its projected growth under the various allocation options, the following series of tables was developed. The four tables show the millions of additional QS units the charter sector must acquire beyond its initial allocation under the proposed options under Action 1 to meet the projected growth in halibut harvest. To generate the tables, the millions of pounds of halibut the charter sector was projected to be over its allocation then was multiplied by the 2007 QS unit to IFQ conversion ratio published by RAM. The reported conversion ratios for 2007 were 6.9979 QS per pound of IFQ in Area 2C and 7.0577 units per pound of IFQ in area 3A. To determine the cost of the QS units, each table would need to be multiplied by the cost of the QS unit. For 2006, RAM (2007) estimated the average weighted sale price of a QS unit to be $3.29 in Area 2C and $2.46 in 3A. All else being equal, for the charter sector to obtain QS, it would need to pay at least that amount to out bid commercial operators for the QS. If those assumptions hold, the cost of the QS could be about 3.3 times the numbers reported in the Area 2C tables and 2.5 times the numbers reported in the Area 3A tables.

Information in Table 56 and Table 58 shows that the Area 2C charter sector is projected to need to purchase between 2.89 million QS units and 17.61 million QS units by 2015. If each QS unit cost $3.29, the charter sector would need to spend between $9.5 million and $57.9 million on QS by 2015. The actual cost will depend on the actual charter harvest growth rate, the alternative selected, biomass fluctuations, and future QS prices. The demand for QS from the charter sector could increase the QS cost. That would increase the total amount the charter sector would need to spend.

Table 56 Millions of additional QS units the charter sector would need to hold that year under Option 1 in Area 2C

Option 1: Fixed percentage of Area 2C combined charter harvest and commercial catch limit for reference period												
	Alt. "a"		Alt. "b"		Alt. "c"		Alt. "d"		Alt. "e"		Alt. "f"	
Year	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
2006	5.13	5.13	2.80	2.80	2.20	2.20	6.10	6.10	4.30	4.30	3.71	3.71
2007	2.24	3.81	-0.09	1.47	-0.69	0.87	3.21	4.78	1.41	2.98	0.82	2.38
2008	1.09	2.78	-1.25	0.44	-1.85	-0.16	2.06	3.75	0.26	1.94	-0.34	1.35
2009	1.78	4.16	-0.55	1.82	-1.16	1.22	2.75	5.13	0.95	3.33	0.36	2.73
2010	2.52	5.71	0.19	3.38	-0.41	2.78	3.49	6.69	1.69	4.88	1.10	4.29
2011	3.32	7.44	0.98	5.11	0.38	4.50	4.29	8.41	2.49	6.61	1.90	6.02
2012	4.16	9.37	1.82	7.04	1.22	6.44	5.13	10.35	3.33	8.54	2.73	7.95
2013	5.07	11.54	2.73	9.20	2.13	8.60	6.04	12.51	4.24	10.70	3.64	10.11
2014	6.04	13.94	3.70	11.61	3.10	11.01	7.01	14.92	5.20	13.11	4.61	12.52
2015	7.07	16.64	4.73	14.30	4.13	13.70	8.04	17.61	6.23	15.81	5.64	15.21

Source: Allocation tables multiplied by 2007 QS to IFQ ratios

Table 57 and Table 59 show that the Area 3A charter sector is projected to need to purchase up to 12.02 million QS units by 2015. If each QS unit cost $2.46, the charter sector would need to spend up to $29.6 million on QS by 2015. As with the Area 2C projections, the actual cost will depend on the charter harvest growth rate, the alternative selected and the future QS prices.

Table 57 Millions of additional QS units the charter sector would need to hold that year under Option 1 in Area 3A

Option 1: Fixed percentage of Area 3A combined charter harvest and commercial catch limit for reference period												
	Alt. "a"		Alt. "b"		Alt. "c"		Alt. "d"		Alt. "e"		Alt. "f"	
Year	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
2006	(1.64)	(1.64)	(5.52)	(5.52)	(4.68)	(4.68)	1.09	1.09	0.95	0.95	1.20	1.20
2007	(3.84)	(3.41)	(7.72)	(7.29)	(6.88)	(6.45)	(1.11)	(0.68)	(1.26)	(0.83)	(1.00)	(0.57)
2008	(3.06)	(2.18)	(6.94)	(6.05)	(6.11)	(5.22)	(0.33)	0.56	(0.48)	0.41	(0.23)	0.66
2009	(2.27)	(0.88)	(6.15)	(4.76)	(5.31)	(3.93)	0.46	1.85	0.32	1.70	0.57	1.95
2010	(1.44)	0.47	(5.32)	(3.41)	(4.48)	(2.57)	1.29	3.20	1.14	3.06	1.40	3.31
2011	(0.59)	1.89	(4.47)	(1.99)	(3.64)	(1.15)	2.14	4.62	1.99	4.47	2.24	4.73
2012	0.28	3.37	(3.60)	(0.51)	(2.76)	0.33	3.01	6.10	2.86	5.96	3.12	6.21
2013	1.18	4.93	(2.70)	1.05	(1.86)	1.89	3.91	7.66	3.76	7.52	4.01	7.77
2014	2.10	6.56	(1.78)	2.68	(0.94)	3.52	4.83	9.29	4.69	9.15	4.94	9.40
2015	3.06	8.27	(0.82)	4.39	0.02	5.23	5.79	11.00	5.65	10.85	5.90	11.11

Source: Allocation tables multiplied by 2007 QS to IFQ ratios

Recall that the difference between Option 1 and Option 2 is that the charter sector is allocated a fixed number of pounds in Option 2. Because the charter sector is allocated a fixed number of pounds, its initial allocation is insulated from fluctuations as a result of biomass changes. However, if it purchases QS, that portion of their holdings will fluctuate with biomass changes just like the commercial allocation. Decreases in the commercial catch limit will decrease the amount of halibut that the charter sector would derive from a unit of QS. When the commercial catch limit declines the charter sector must purchase additional QS to maintain the same number of pounds of halibut in its pool.

Table 58 Millions of additional QS units the charter sector would need to hold that year under Option 2 in Area 2C

Option 2: Fixed Pounds in Area 2C						
	alt. "a"		alt. "b"		alt. "c"	
Year	Low	High	Low	High	Low	High
2006	4.22	4.22	2.40	2.40	0.96	0.96
2007	1.33	2.89	-0.49	1.07	-1.93	-0.36
2008	0.17	1.86	-1.65	0.04	-3.08	-1.40
2009	0.86	3.24	-0.96	1.42	-2.39	-0.01
2010	1.61	4.80	-0.21	2.98	-1.65	1.54
2011	2.40	6.53	0.58	4.71	-0.85	3.27
2012	3.24	8.46	1.42	6.64	-0.01	5.20
2013	4.15	10.62	2.33	8.80	0.90	7.37
2014	5.12	13.03	3.30	11.21	1.86	9.77
2015	6.15	15.72	4.33	13.90	2.89	12.47

Source: Allocation tables multiplied by 2007 QS to IFQ ratios

Table 59 Millions of additional QS units the charter sector would need to hold that year under Option 2 in Area 3A

Option 2: Fixed Pounds in Area 3A						
	Alt. "a"		Alt. "b"		Alt. "c"	
Year	Low	High	Low	High	Low	High
2006	2.11	2.11	(0.44)	(0.44)	(1.42)	(1.42)
2007	(0.09)	0.34	(2.65)	(2.22)	(3.62)	(3.19)
2008	0.69	1.58	(1.87)	(0.98)	(2.84)	(1.95)
2009	1.49	2.87	(1.07)	0.31	(2.04)	(0.66)
2010	2.31	4.22	(0.25)	1.67	(1.22)	0.70
2011	3.16	5.64	0.60	3.08	(0.37)	2.11
2012	4.03	7.12	1.48	4.57	0.50	3.60
2013	4.93	8.68	2.37	6.13	1.40	5.16
2014	5.85	10.31	3.30	7.76	2.33	6.79
2015	6.81	12.02	4.26	9.46	3.29	8.49

Source: Allocation tables multiplied by 2007 QS to IFQ ratios

An issue of concern with the willing/buyer and seller alternative is whether the charter sector will be able to access a sufficient amount of halibut to meet client demand for trips. Based on information presented in the section on Annual Purchase Limits, the number of QS being sold in Area 2C would not meet the client demand for trips. In Area 3A, sufficient QS would be on the market, but the price that the charter sector would pay would determine if the commercial sector sells to them or another commercial business.

Members of the commercial sector have also noted that a willing seller generally sells their QS through a broker and would not know who is purchasing the quota share until after the earnest money agreement is signed. Under that situation, if there is animosity between the seller and the charter sector, the seller would be less likely to refuse a sale simply because the buyer is from the charter sector.

The mechanisms regarding who would buy the halibut, who would hold the halibut, and who could catch the halibut must be defined as part of this overall amendment and are addressed in other sections. However, if market conditions result in the commercial sector being unwilling to sell enough halibut for the charter sector to satisfy client demand, the Council will likely be petitioned to provide relief to the charter sector by modifying the existing program. Based in part on those concerns, the Council is considering the pro rata reduction concept.

Suboption - Exempt category D QS from willing buyer/seller reallocation: The suboption to exempt Class D QS from the willing buyer and seller reallocation option reduces the number of QS that are available for the charter sector to purchase. During 2006, RAM transfer data indicates that Area 2C Class D QS transfers accounted for 10.6% of the total QS transfers, but only 8.6% of the QS value transferred. In Area 3A, they accounted for 8.7% of the QS units transferred and 7.2% of the transferred value. These ratios indicate that Class D QS sells for less than other classes of QS, on average. Removing class D shares from the program would result in the charter sector paying a higher price for halibut than if the class D shares were included. In 2006 the difference between Class D share transfer prices and the aggregate transfer prices for the other classes was about $0.67 in 2C and $0.47 in 3A. Projections in Section 2.6.2 indicate that under the GHL the charter sector would need between 1.6 and 4.8 million QS in 2C to meet client demand. If they could have purchased all class D QS they would have saved a maximum of $1.08 million to $3.21 million. It is unlikely they would have been able to purchase all class D shares, so the savings from including Class D shares is expected to be less than those estimates. Using the same method to calculate the change in cost to the charter sector in area 3A, the QS units projected to be needed ranged from 2.3 million to 4.2 million. At a savings of $0.47 per QS unit the charter sector

could save between $1.07 million and $1.98 million. Again, these amounts represent the maximum that could be saved, and the actual savings would be less.

Commercial harvesters would like to prohibit the charter sector from buying class D shares to ensure that entry level commercial fishermen can use these less expensive shares to enter the fishery. The class D shares in the commercial fishery are less costly because of the vessel length restrictions associated with its use. If those QS were used in the charter sector the commercial restrictions would not apply. Therefore, the charter sector would derive the value from a unit of class D QS as they would class A QS. Because the QS class designations do not apply to the charter sector they will want to purchase the lowest priced QS possible from the commercial sector. That would increase the demand for class D shares and could drive up its price, making it more difficult for entry level commercial fishermen to buy into the program.

Option 2 – Pro rata reduction: A "pro rata reduction" indicates that all QS holders in IPHC Area 2C or 3A would have their IFQ allotment reduced by the same percentage, but their QS holdings would not be adjusted. The authority to implement a pro rata reduction is based on the fact that QS/IFQ are not absolute rights or interests subject to the "takings" provision of the Fifth Amendment (50 C.F.R. § 679.40(f)).[55] The federal government has the right to reduce the value of QS or change the allocation of QS/IFQ. Whether the value of the QS held by an individual would be altered as a result of a pro rata reduction depends on the amount of compensation they receive for the halibut they give up. The pro rata reduction is treated like an annual lease where the QS holders are compensated each year for the amount of halibut they transfer to the charter sector. If the compensation amount does not meet or exceed the net revenue they could derive from harvesting the fish or selling them to another buyer, the future net revenues would be reduced and QS values would be reduced. Alternatively, if the present value of the compensation stream exceeds the present value of future net revenue a person can derive from using the QS themselves, the QS value could increase.

Discussions with NOAA GC staff indicated that the option to reduce the pool of halibut available to the commercial sector would not require changes in existing Federal legislation (J. Lepore pers. comm.). This option avoids the issue of a pro rata reduction in QS upon which individuals may have existing liens. Instead, the conversion ratio of QS to IFQ would be increased in the same manner as the conversion ratio changes when biomass declines reduce the commercial catch limit. A pro rata reduction of the commercial TAC, while controversial, would be one way of avoiding the market effects associated with the establishment phase of a common pool management system.

One reason the pro rata reduction is being considered is to help the charter sector access a sufficient amount of halibut to meet client demand. If client demand for charter trips and the associated catch exceeded the amount of halibut the sector is allocated, they would need to acquire additional halibut from the commercial sector or be prohibited from retaining halibut before the traditional end of the charter

[55] Sec. 303A(b) of the MSA states that a limited access privilege, quota share, or other limited access system authorization established, implemented, or managed under this Act—

shall not create, or be construed to create, any right, title, or interest in or to any fish before the fish is harvested by t(1) shall be considered a permit for the purposes of sections 307, 308, and 309;

(2) may be revoked, limited, or modified at any time in accordance with this Act, including revocation if the system is found to have jeopardized the sustainability of the stock or the safety of fishermen;

(3) shall not confer any right of compensation to the holder of such limited access privilege, quota share, or other such limited access system authorization if it is revoked, limited, or modified;

(4) shall not create, or be construed to create, any right, title, or interest in or to any fish before the fish is harvested by tholder; and

(5) shall be considered a grant of permission to the holder of the limited access privilege or quota share to engage in activities permitted by such limited access privilege or quota share.

season. Under the willing buyer/seller option, the charter sector's ability to purchase sufficient halibut will depend in part on the willingness of QS holders to sell at the market price.

The pro rata reduction option would not affect the number of QS units in the commercial sector, but would decrease the amount of halibut available to them in IPHC Areas 2C and 3A. To calculate an individual's IFQ amount the percentage of the QS pool held by the person is multiplied by the total pounds of halibut available to the commercial sector in that IPHC Area. The effect of reducing the pool of halibut available to the commercial sector, as part of a pro rata reduction, would be similar to how decreasing the halibut abundance affects the annual calculation of the commercial catch limit, except QS holders would be compensated for the reduction in their harvest amount.

A pro rata reduction of the commercial catch limit could reduce IFQ amounts of some commercial QS holders below the level these operators need for their businesses to survive, if the compensation is less than they would earn by harvesting the IFQ themselves. Those operators would be forced to acquire additional QS or sell their QS. The expected result is that the commercial sector would further consolidate QS holdings. However, the persons who are limited by the QS use cap or block limits would be unable to increase their QS holdings. Persons at the use cap limits will forgo the most halibut, but will also have the most halibut to harvest. Persons who are limited by the number of blocks they hold (especially those that hold small blocks) or that lack of resources to buy more QS could be less capable of dealing with the loss of halibut. If those operations are marginal, the reduction in halibut (if the compensation is too low) could force them to exit the fishery. The potential magnitude of this effect has not been quantified, but has been expressed as a concern by some member of the commercial sector.

It is unlikely that the pro rata reduction concept and the willing buyer/seller concept could be linked together. A pro rata reallocation that reduces the Area 2C and Area 3A pool of halibut available to the commercial sector, by default, defines the sellers as all persons in the IPHC area that hold QS. For a transaction to involve all willing sellers, every person holding QS in the area must be willing to forego a percentage of the reallocation that is equal to their percentage of the QS pool in an area. Each QS holder will only be willing to forgo the pounds removed from their IFQ total if the compensation amount is adequate.

Because commercial operators have different cost structures, some QS holders will be willing to accept a lower price for the halibut they provide to the charter sector. Market based transactions that currently take place between commercial harvesters are between willing buyers and a willing sellers. Persons sell their QS if the marginal value of an additional unit of quota share is worth more to the buyer than the seller (Criddle 2006). If the market price is too low, the seller does not have to accept the offer price. For some sellers the market price could be too low and the transaction would not take place, for other sellers the price could be sufficient to make the transaction.

As stated earlier, members of the commercial sector feel that any reallocation should take place between a willing buyer and a willing seller. The pro rata reduction mechanism does not meet that criterion. For all sellers to willingly accept compensation for their portion of halibut that is being reallocated they must be paid an amount that would offset the present value of future net revenues. Because the compensation necessary to be considered sufficient depends on the seller, two different structures could be developed to ensure sellers willing to forgo a portion of their IFQ. First, the sellers could be compensated different amounts based upon the price per pound at which they are willingness to sell. If the reallocation and compensation occurs annually, low priced sellers would be expected to learn that they could receive more dollars for their halibut. Overtime the cost per unit of the reallocation would increase. The second option would be to compensate the commercial sector at a level where the lowest cost operator would be willing to forgo harvesting its portion of the reallocation amount. Under that model the charter sector would be paying too much, on average, for the reallocated fish.

Both of those options are problematic. Paying sellers different dollar amounts for a pound of IFQ in an area would require the management agency overseeing the payment process to determine the appropriate amount of compensation each person should receive. Management agencies overseeing the program (NMFS or ADF&G) currently do not have information that would be required to calculate the net value of a pound of halibut for each commercial operator in Areas 2C and 3A. Without information on the QS holder's net revenue per pound, it is not possible to determine the profit being derived from the halibut being reallocated from each seller.

Historic QS transfer values could be used to determine the price that a subset of charter operators have been willing accept to forgo harvesting halibut. The sellers are expected to be persons who have higher operating costs than the persons buying the QS. NMFS (2006) provided a summary of the average transfer prices of QS for the years 1995-2006. Reviewing those data indicate that the mean price of Area 2C QS has increased from $1.14 per unit in 1995 to $3.29 per unit in 2006. The largest increases in QS unit prices occurred after 2003. In Area 3A QS sold for $0.79 per unit in 1995. During 2006, the QS unit price had increased to $2.46 per unit. It is not appropriate to compare the QS sale prices across areas because of the different conversion factor from QS units to pounds of halibut. To compare prices by area they should be converted to pounds of IFQ. If the value of QS units is converted to pounds, the mean price of a pound of halibut sold during 2006 equals $18.43 in 2C and $18.09 in 3A. These prices represent the permanent transfer price of a pound of halibut.

Table 60 Annual prices for QS with IFQ transfers by year and area.

Area	Year	Mean Price $/IFQ	Total IFQ Transferred used for pricing	Mean Price $/QS	Total QS Transferred Used for Pricing	Number of Sales Used for Pricing
2C	1995	7.58	996,874	1.14	6,629,554	315
	1996	9.13	681,056	1.37	4,539,813	289
	1997	11.73	517,715	1.92	3,057,477	211
	1998	10.14	220,894	1.79	1,253,771	106
	1999	N/A	N/A	N/A	N/A	N/A
	2000	8.20	423,347	1.15	3,006,920	95
	2001	9.22	412,990	1.36	2,806,238	100
	2002	8.97	363,474	1.28	2,550,052	84
	2003	9.76	274,537	1.39	1,926,434	93
	2004	13.70	365,513	2.41	2,073,407	93
	2005	18.06	311,907	3.31	1,699,765	72
	2006	18.43	246,540	3.29	1,380,274	77
3A	1995	7.37	1,782,912	0.79	16,658,196	355
	1996	8.40	1,582,609	0.90	14,724,748	352
	1997	9.78	1,276,525	1.32	9,443,198	294
	1998	8.55	666,649	1.20	4,743,875	157
	1999	N/A	N/A	N/A	N/A	N/A
	2000	7.94	614,960	0.79	6,212,009	120
	2001	8.63	771,815	1.02	6,519,428	145
	2002	8.35	711,255	1.02	5,810,732	124
	2003	9.81	565,653	1.20	4,629,364	126
	2004	13.88	875,829	1.88	6,463,336	157
	2005	18.07	385,893	2.49	2,803,054	96
	2006	18.09	586,035	2.46	4,301,567	116

Source: NMFS, 2007. Transfer Report Summary

QS prices not only vary by area, they also vary by the QS class. Four classes[56] of QS were defined when the Council implemented the halibut IFQ program. Class A QS may be used by vessels that harvest and process halibut. Those QS units typically sell for the highest price (CFEC, 1998). Class D QS may only be used on catcher vessels that are less than 35' in length. Class D QS has typically sold for the least amount. Therefore, when determining compensation for sellers it would be appropriate to compensate holders of different QS classes differently.

The more appropriate value to consider under the pro rata reduction where the reallocation is compensated each year based on the pounds of halibut transferred is the lease price. Leasing of IFQ is only allowed by persons holding Class A QS except under special circumstances. Holders of catcher vessel QS for an area could lease up to 10% of their QS in that area during the years 1995, 1996, and

[56] The vessel categories are defined as follows: Class A = freezer vessel of any length; Class B = catcher vessel greater than 60 feet in length; Class C = catcher vessel between 60 and 35 feet in length; Class D = catcher vessel less than 35 feet in length.

1997. However, the regulations providing for leases of catcher vessel QS expired on January 2, 1998 and have not been renewed. The surviving spouse or other beneficiary can still lease catcher vessel QS for a three-year period following the death of the QS holder. Because of the strict catcher vessel leasing regulations, only data on Class A leases are available. NMFS (2007) has reported that lease prices for class A shares increased from $0.89 per pound of halibut IFQ in 1995 to $1.43 per pound in 2005. Because Class A QS when available is expected to sell for the highest price, the lease price of IFQ derived from other share classes would be expected to be less than $1.43 per pound in 2005. Using the lease price of class A QS, adjusted by the ratio of QS transfer prices relative to A shares could provide a reasonable estimate of a point to start compensation price negotiations if those data were available. However, sales data for Class A QS is very limited in 3A and often class A QS are not transferred in Area 2C.

The management agency tasked with compensating sellers could also survey each operator to determine the amount of money that they would be willing to accept for a pound of IFQ. Because sellers would know that requesting a higher price could increase compensation, they would be expected to inflate the price they state they are willing to accept. Therefore, a survey to determine willingness to accept a compensation price, after the program is implemented, is not expected to yield a true reflection of appropriate compensation. The problems outlined indicate that it is unlikely that managers can determine a fair market price that could be universally accepted by all QS holders and charter sector representatives.

The other option discussed was compensating all QS holders the same amount per pound of halibut reallocated. That option would result in the charter sector overpaying for the halibut. The amount of the overpayment would equal the aggregate difference between the true price that QS holders are willing to accept and the amount they are paid. Any overpayment would increase the operating cost of each business if they are required to pay for fish. Alternatively the charter clients could pay the excess cost if they repay the debt through a stamp or license fee. Section 2.6.3 provides estimates of how these programs would work and estimates of the cost per client. That section of the document also concludes that it will be difficult to structure a program where the charter sector can access sufficient halibut to cover all future client demand and still have the reallocation take place between willing buyers and sellers.

Finally, members of the commercial sector have indicated that tensions within communities could be elevated as a result of the pro rata reduction. Tensions will increase if the commercial sector feels the charter sector is continuing to take "its" fish at a discounted price. This once again emphasizes the point that setting the compensation value under a pro rata reduction is a critical aspect of getting some level of support from the commercial sector. If the price is viewed as too low, continued hard-feelings could build between the various groups within a community.

Suboption – Exempt category D QS from pro rata reduction: The suboption would exempt Class D QS from voluntary and involuntary pro rata reductions. The complications of exempting any class from the trading pool are discussed in other sections of the analysis. In the context of a pro rata reduction, exempting a given Class or portion of a Class will increase the size of the pro rata reduction on the other size classes in direct proportion to the exempted portion of the entire QS pool.

Table 61 shows the number of QS units that were held by commercial halibut fishermen in 2006. If the holders of Class D are exempted from the pro rata reduction, 15.1% of the commercial catch limit in Area 2C would be exempt from being reallocated. In Area 3A, 6.9% of the commercial catch limit would be exempt. To compensate for the Class D QS being exempted, the holders of other QS classes would need to increase the amount of halibut they forgo by 17.75% in 2C and 7.37% in Area 3A. In other words, if an Area 2C commercial QS holder needed to provide 100 pounds of halibut to the charter sector when category D QS was included in the compensation calculation, they would need to provide 117.75 pounds

when they are excluded for the charter sector to receive the same increase in halibut. Likewise, if an Area 3A QS holder provided 100 pounds of halibut to the charter sector when all sectors contribute, they would need to provide 107.37 pounds when category D shares are excluded.

Table 61 Number of QS units held during 2006, by area and quota class.

		QS Class				
AREA	**Units**	**A**	**B**	**C**	**D**	**Total**
2C	QS units	1,249,141	2,653,410	46,670,959	8,978,529	59,552,039
	Percent of area total	2.1%	4.5%	78.4%	15.1%	100.0%
3A	QS units	4,773,918	68,559,245	98,878,681	12,699,471	184,911,315
	Percent of area total	2.6%	37.1%	53.5%	6.9%	100.0%

Source: NMFS RAM Division IFQ data

Since the number of QS units is quite stable from year-to-year, the percentage increase in the portion of the reallocation that the holders of A, B, and C shares must contribute is not anticipated to change substantially in the future. The QS pool only changes when persons are added through an appeals process or are removed for a violation or non-renewal of their application. Because the IFQ program is now over 10 years old, the QS pool is not expected to increase or decrease substantially. NMFS (2007) provided information on the number of QS units initially issued in IPHC Area 2C and compared that amount to the number held at the beginning of 2006. The data showed that the number of QS units over that time period decreased from 59,568,892 units to 59,552,039 units, or a decrease of 16,853 QS units. In Area 3A the number of QS units initially issued was reported to be 185,492,433. As of the beginning of 2006, the number of QS units had declined by 581,118 (or less than 0.003%). Even if the total change was for class D QS, it will have very little impact on the amount of compensation the other QS holders would contribute as compensation to the charter sector.

Members of the commercial sector have expressed concern that the pro rata reduction would have the greatest negative impact on persons who have purchased QS for a price that is greater than the net present value of the future compensation. These commercial operators will face a situation where they lose money on the portion of allocation that is reallocated. If they are currently marginal operators and the commercial catch limit is constant or declining, they could be forced to sell their quota at a loss as a result of the pro rata reduction. Since the category D QS is often referred to as "entry level quota", the holders of category D quota as a group would be at risk.

Representatives of the commercial sector's interests have also stated that the pro rata reduction would have a negative impact on the persons who were issued a small amount of QS that covers their bycatch of halibut in other fisheries. These people will lose the revenue from halibut that has a low cost to harvest or be forced to buy additional quota to cover those fish. They will also be forced to increase the amount of halibut they discard, if the reallocation reduced their IFQ amount to a point they no longer cover their natural bycatch of halibut that are over 32". Salmon trollers in Area 2C that hold category D quota are a group that could be impacted in this way.

Conclusions:

- A compensated reallocation program between willing buyers and sellers would be preferable to the commercial sector. The program could be structured so that an entity could hold the purchased QS for the sector and all charter operators could fish from that pool. However, the projected growth of the charter sector is expected to be greater than the amount of QS being transferred on the market. Therefore the charter sector may not be able to access sufficient QS to cover its client demand for trips (assuming a fixed harvest of halibut per client).

- A market-based system of allocation would allow halibut to flow to the charter sector if it has the greatest value to them.
- NOAA GC has indicated there are no legal impediments to implementing a pro rata reduction. There are no takings issues surrounding reducing the amount of halibut that is derived from holding a unit of QS.
- The pro rata reduction could ensure the charter sector has a sufficient amount of halibut to meet client demand. However, the amount of compensation that would be paid for the fish is critical to the program gaining any acceptance from the commercial sector. Currently the commercial sector views this program as unacceptable.
- Determining the appropriate level of compensation under the pro rata reduction will be difficult. The data are not currently available to determine compensation at an individual level. Estimates of arms-length class A lease values adjusted by the ratio of QS transfer values from other QS classes to the class A price may provide the best starting point for annual compensation payments.
- A formal system to formulate the final compensation price that both the commercial and charter sectors can accept for setting a "fair value" for each pound of halibut being reallocated must be developed. Whether the system is formula based, negotiated, or set through an arbitrator, both sides will need some level of trust in the process or the result will not be accepted by one or both sides.
- Exempting category D QS holders from the willing buyer/seller compensated reallocation program will increase the cost of halibut to the charter sector, while allowing entry level commercial fishermen to buy into the IFQ program at a cost that is less than buying other categories of QS.
- Exempting category D QS holders from the pro rata compensated reallocation will increase the amount of halibut that other QS holders will have to forgo harvesting by 17.75% in 2C and 7.37% in Area 3A.

2.6 Economic and Socioeconomic Impacts of Alternatives

2.6.1 Economic Effects on Industry and Communities

Alternative 2 Action 1 (Sector Allocation)

This section describes how the charter sector allocation is expected to impact the charter sector, charter clients, the commercial sector, consumers of halibut, and the communities that support the various halibut sectors. It is assumed in this section that the charter sector allocation is a pool of fish that all eligible members of the charter sector would be allowed to have their clients harvest. When the charter allocation limit is reached, charter clients would no longer be allowed to retain[57] additional halibut for the remainder of the year. Compensated reallocation, also being considered as a separate action in this analysis, could allow the charter sector to obtain additional halibut. However, the impacts of that option are considered as part of that issue

An important assumption within the charter allocation option is that when the charter sector reaches its harvest limit, it will be required to stop fishing. Constraining charter harvests to the predetermined amount will require a harvest accounting system to determine when the charter allocation is taken. *For analytical purposes only,* the current methods used by ADF&G to determine charter harvests are assumed to be adequate to determine when the sector has harvested their limit. Without this assumption, the

[57] It is assumed that the charter fleet could continue to offer charters and retain species other than halibut.

analysis could not be conducted. However, a thorough review of enforcement and in-season data management needs must be conducted before this program is approved and implemented.

To determine the annual charter harvest, data from the mandatory ADF&G charter logbooks, implemented in 2006 to gather harvest data from individual operators, would be used. Data required to be reported in ADF&G charter vessel logbooks include the number of halibut retained and released by individual anglers. The logbooks do not require the person submitting the logbook to report the weight of each halibut. To estimate the total weight, the number of halibut harvested would be multiplied by the average halibut weight from the previous year.

Additional data collection measures implemented by ADF&G can be used to verify the information reported in the logbooks. A summary of those measures was taken from NMFS response to comment 10 on the final rule to implement the 32" limit for one halibut harvested as part of the two fish bag limit[58]. Those measures include:

- Creel survey technicians validating the number of halibut offloaded when possible;
- Increased logbook inspections by deputized ADF&G staff;
- Increased review of submitted logbooks and follow-up calls to charter operators to resolve missing or misreported information;
- A random sample mail survey of clients to compare their reported harvest to logbook data recorded by operators.

These data collection and verification measures will help ensure that the data being reported in the logbooks are accurate. If the data reported in logbooks are accurate, it is assumed that the charter harvests can be estimated with sufficient precision to limit retention of charter harvests when that sectors cap is reached. However, if these measures are ever determined to be insufficient, additional reporting requirements could be developed. These will be explored further in a supplemental analysis of recordkeeping, implementation, and enforcement issues.

The status quo is represented by the management actions that are currently in Federal and State regulation as well as those that have been approved by the Council. The Council has approved a moratorium on new entry into the Area 2C and 3A charter sectors. While the moratorium will limit the growth in the number of vessels carrying clients in the charter fishery, it is not expected to reduce the fleet's capacity to carry clients. Therefore, the moratorium by itself is not expected to reduce the retention of halibut by clients on charter vessels.

The Council and NMFS have taken action to reduce the current charter harvests in Area 2C. During 2007 the Council and NMFS have implemented or proposed the following amendment for halibut fishery in IPHC Area 2C:

- NMFS has implemented a regulation that one of two fish in the daily bag limit must be less than or equal to 32 inches (effective June 1, 2007)
- The Council recommended that the halibut charter regulations be revised for 2008 to include:
    1. No charter halibut harvest by skipper and crew (currently a State regulation);
    2. line limits of six per vessel, not to exceed the number of paying clients on board (currently a State regulation);
    3. An annual limit of four fish per angler.

[58] http://www.epa.gov/fedrgstr/EPA-IMPACT/2007/June/Day-04/i10736.htm

In October 2007 the Council is scheduled to review proposed measures to control charter harvests of halibut in Area 3A. Options being considered include:

- One trip per day;
- No harvest by skipper and crew and line limits;
- Annual limit of four, five, or six fish per angler;
- Reduced bag limits of one fish per day for May, June, July, August, or the entire season;
- Two fish daily bag limit, with one fish any size and one fish larger than 45" or 50";
- Two fish daily bag limit, with one fish any size and one fish less than 32", 34", or 36";
- Two fish daily bag limit, with one fish any size and one fish less than 32" or larger than 45" or 50".

Final action on these options is scheduled in December 2007 with the intent that regulations would be implemented for the 2008 season. If some of the proposed Area 3A actions are implemented on that time line they would alter the projected Area 3A harvests for future years.

This analysis uses projected charter harvests through 2015 to study the impacts of various allocation options. The charter harvest projections were made using the status quo for both Area 2C and Area 3A and long-term growth rates. The projections also use the long-term (i.e., 1995-2006) industry growth rates to create a lower expectation of future harvests and the five-year (i.e., 2001-2006) average growth rates to create a higher projection of future harvests.

Charter Sector: The charter sector is comprised of business operators who are licensed by the State of Alaska to provide guided sport trips. These businesses book clients for halibut charter fishing trips and offer a variety of different recreational experiences. Charter businesses provide the necessary fishing equipment and knowledge to give clients the opportunity to harvest halibut, and other species. They also provide assistance in cleaning the harvest, and may also help preserve, store, and ship the harvest back to the client's home. Depending on clientele and location, they may provide half-day trips, full-day trips, multi-day trips, or any combination of those types of trips. Some operators are also part of a larger lodge business. Some or all of their clients stay at the lodge and take halibut trips as part of their wilderness adventure. There are also a limited number of charter businesses that own floating lodges where clients are housed on a larger vessel, and may also use smaller vessels to fish for halibut. Even with the variety of charter business structures, but once on the fishing vessel the actual fishing trips are thought to be fairly similar. The primary differences are the size of the vessel, the number of clients on the vessel, and the level of attention given individual anglers.

There is not a single source that provides information on halibut trip prices. Several charter operators have developed internet sites that list their rates and the types of trips they offer. Reviewing a sample of internet charter sites showed that the prices of halibut trips in 2007 varied depending on time of the year, the type of vessel used, and the length of the trip. In general, full-day trips originating from the Homer area cost between $150 and $250. Some trips were priced higher if the client wanted to book a vessel with four or fewer clients for more individualized attention. Discounted trips were offered by most of the charter operators for trips outside of the most popular fishing season (before early to mid June or after the early to middle of August). The exact dates for discounted rates varied by company. Rates quoted for Seward were similar to those out of Homer.

The GHL amendment analysis provided some basic information on the cost of a charter trip in Area 2C. Data from the GLH analysis indicated that the prices paid for a charter trip are higher in Area 2C than in Area 3A (NPFMC, 2001). Rates for trips from Area 2C ports varied more than in Area 3A ports because

it is affected by cruise ship timelines (4-hour trips or 6-hour trips), are combined with other activities[59] (e.g., salmon fishing), or the charter trip is part of a lodge package that also includes accommodations. However, when a site reported the halibut charter rates alone, the price for a full-day charter ranged from $250 to $350 per person. These prices are higher than the typical rates reported in Area 3A ports.

Implementing a cap on the amount of halibut the charter sector may harvest in Areas 2C and 3A has the potential to change how the charter fishery operates. A cap on charter harvests will preclude charter clients from retaining halibut when the cap is reached. To ensure that halibut may be retained on a trip, clients may book their trips earlier in the year than they would have with no cap. For example, persons who wait to take a charter trip at the end of August or the first of September to take advantage of the late season rates, may push up their trip to earlier in the year to ensure they will be able to retain halibut. People would fish earlier in the year because it is essentially racing to harvest the available halibut. That race to take a charter will tend to shift the charter harvests to earlier in the year (Criddle 2004).

Figure 12 shows the cumulative percentage of charter harvest by week during 2006. The shape of the Area 2C and Area 3A harvest curves indicate that the weekly harvests are lower either early or late in the fishing year than it is during the peak season. During 2006, the Area 2C charter fleet harvested over 5% of its total harvest every week starting June 5th through the week starting August 21st. The percentage of total charter harvest dropped dramatically during the weeks before and after those dates. Because in Area 2C the charter sector is dependent on cruise ship clients in ports like Ketchikan, Sitka, Juneau, and Haines, it may be difficult for clients to move their charter trip to earlier in the year if It is locked into a tour package with specific port of call dates. However, if the charter sector is close to reaching its cap, clients may decide to take a charter trip at their early ports of call instead of waiting until later in the cruise. If halibut charter fishing is an important component of their overall trip, they may also decide to move their vacation to earlier in the year.

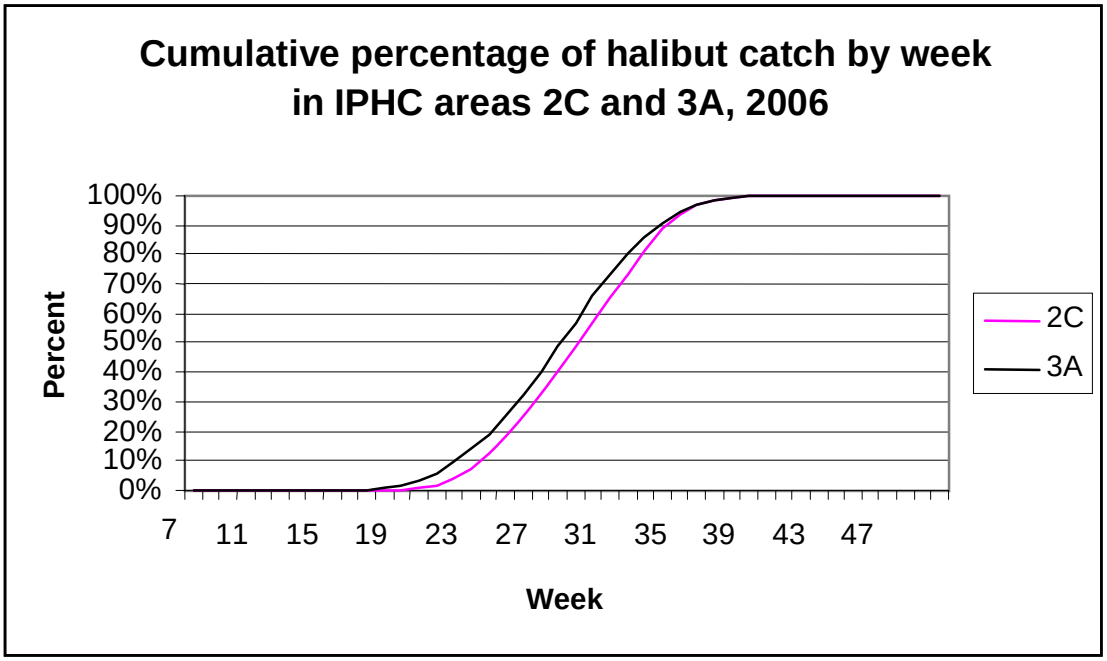

Figure 12 Cumulative Percentage of Halibut Charter Catch by Week During 2006

[59] Combination trips for salmon are also common in many ports in IPHC Area 3A

Halibut harvests from Area 3A tend to follow the same general trend as discussed for Area 2C. The difference in the two areas is that Area 3A harvest tended to start sooner and taper off sooner than in Area 2C. The Area 3A charter fleet was harvesting over 4.1% of their total harvest during the week of May 22nd. By the week of August 14th, they were harvesting less than 5% of its annual total.

The Area 3A fishery has been described as more of a "meat" fishery with a greater percentage of the trip comprised of Alaska residents trying to "fill their freezer", relative to Area 2C. Assuming that is true, Alaska residents would have greater flexibility to move their fishing trip earlier in the year. Therefore, the Area 3A fishery may have a greater potential to shift more of the trips earlier in the year. This trend would likely continue to push the Area 3A charter harvests earlier and earlier during the year.

Figure 13 shows the percentage of total charter halibut caught in Areas 2C and 3A by week. This information again demonstrates that the Area 3A fishery has more activity earlier in the year and less later in the year than Area 2C. The Area 2C halibut charter fishery continued at peak summer levels for about 2 weeks longer than Area 3A during 2006. Both areas had weeks when over 8% of the annual harvest was taken.

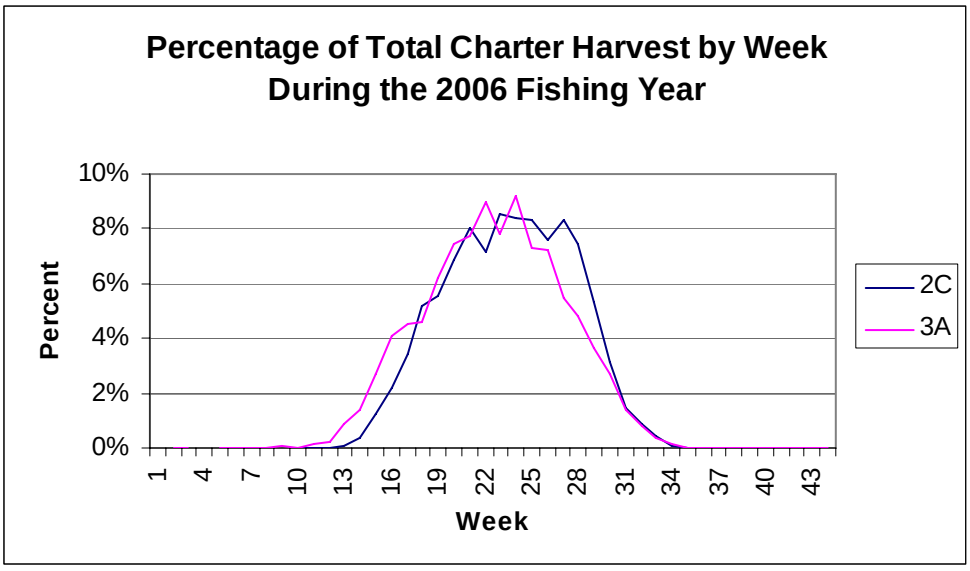

Figure 13 Weekly Percentage of Total Charter Harvest During 2006.

Criddle (2004, 2006) described four types of management combinations for a halibut fishery shared by a commercial and charter sector. One case was when the charter sector was managed under a harvest cap and the commercial sector is managed under an IFQ program. He concluded that with a sportfishing charter fleet comprised of small homogeneous charter businesses, an increase in demand for trips would result in an increase in trip prices, in the short-run. Because of the harvest cap, charter operators would race to provide trips before the cap is reached. The cap allows the sector to provide a limited number of trips. As a result of racing to allow their clients to harvest the available halibut, the charter season would shift to earlier in the year. The shift to earlier and earlier trips is expected to continue as charter operators compete for the available halibut. Competition to attract clients is expected to eliminate the potential short-run producer surplus that could occur as a result of constraining the supply of trips.

Depending on how early the fishery is expected to close, the cap on harvests could eliminate the discounted trips that occur after mid-August. If sufficient demand for trips was created before early to mid June, the availability of early season discounted charters could also be diminished. Alternatively, if

demand is still weak in the early season, charter operators may feel additional pressure to book clients during that time and the discounted trips could be used as an incentive to attract clients. However, as stated earlier, competition for clients is expected to reduce trip prices, on average, to the point that no producer surplus is generated.

Finally, to provide an estimate of how the proposed allocations will impact the length of the charter season two tables were developed (Table 62 and Table 63). The proposed sector allocation was divided by its projected charter harvests. The result of that calculation is shown in the "percent of charter allocation" section. That percentage is then compared to the percent of the total harvest that was reported earlier by week during 2006. Assuming that the same percentages of total harvest during a week will continue into the future, the week the fishery could close are reported in the tables. If charter harvests are shifted to earlier in the year, as anticipated, the week that the fishery closes would actually be progressively earlier in the year.

Estimates of the week the fishery is projected to close were made using both the low and high projected growth rates in charter harvests. Based on those estimates, the fishery could close as soon as the end of June by 2015 under Options 1(a) and 1(d). All of the remaining options would have the fishery close early in July by 2015. Options 1(a), 1(d), 1(e), and 2(a) are projected to result in the fishery closing in late July or early August.

Closing the fishery as early as June, could result in some members of the charter sector filling the closure time with other activities. Those activities could include salmon fishing trips, harvest and release halibut fishing, sightseeing, or targeting other saltwater fisheries. The amount of effort that moves to other activities will depend on the individual operator's willingness to diversify his/her business and ability to attract clients.

Table 62 Estimates of when the 2C charter fishery may close under the proposed allocation options

	% of charter allocation				Week Fishery Projected to Close			
Option 1	**Low**		**High**		**Low**		**High**	
	2007	**2015**	**2007**	**2015**	**2007**	**2015**	**2007**	**2015**
a	80%	56%	70%	35%	31-Jul	10-Jul	24-Jul	26-Jun
b	101%	71%	89%	44%	n/a	24-Jul	14-Aug	3-Jul
c	106%	74%	93%	47%	n/a	31-Jul	21-Aug	3-Jul
d	72%	50%	63%	32%	31-Jul	10-Jul	17-Jul	26-Jun
e	88%	61%	77%	39%	14-Aug	17-Jul	31-Jul	3-Jul
f	93%	65%	82%	41%	21-Aug	24-Jul	7-Aug	3-Jul
Option 2								
a	88%	62%	78%	39%	14-Aug	17-Jul	31-Jul	3-Jul
b	104%	73%	92%	46%	n/a	31-Jul	14-Aug	3-Jul
c	117%	82%	103%	52%	n/a	7-Aug	n/a	10-Jul

Assumptions: Harvest amounts for Option 1 were calculated using the percentage allocation multiplied by 9.942Mlb. The percentage of total harvest from 2006 will continue into the future. The closure week was calculated by comparing the projected harvest to the percentage of total harvest by week from 2006 data
Notes: N/A indicates charter harvests would not be expected to be constrained.

In Area 3A the closures are not anticipated to occur as soon. The earliest any of the alterantives are expected to result in a closure was mid-July during 2015. Options 1(b) and 1(c) are not projected to close the fishery until the second week of August. During 2007 only Option 2(a) is expected to close the fishery early, and that cap is projected to be reached during the first week of September. Given that the Area 3A fishery is scaling back by mid-August, the impacts are not as dramatic as in Area 2C.

Table 63 Estimates of when the 3A charter fishery may close under the proposed allocation options.

% of charter allocation over the cap					Week Fishery Projected to Close			
	Low		High		Low		High	
Option 1	**2007**	**2015**	**2007**	**2015**	**2007**	**2015**	**2007**	**2015**
a	115%	91%	113%	78%	n/a	14-Aug	n/a	24-Jul
b	130%	103%	128%	88%	n/a	n/a	n/a	7-Aug
c	127%	100%	125%	86%	n/a	n/a	n/a	7-Aug
d	104%	82%	103%	71%	n/a	31-Jul	n/a	17-Jul
e	105%	83%	103%	71%	n/a	31-Jul	n/a	17-Jul
f	104%	82%	102%	71%	n/a	31-Jul	n/a	17-Jul
Option 2								
a	100%	79%	99%	68%	n/a	24-Jul	4-Sep	17-Jul
b	110%	87%	108%	75%	n/a	7-Aug	n/a	24-Jul
c	114%	90%	112%	78%	n/a	14-Aug	n/a	24-Jul

Assumptions: Harvest amounts for Option 1 were calculated using the percentage allocation multiplied by 9.942Mlb. The percentage of total harvest from 2006 will continue into the future. The closure week was calculated by comparing the projected harvest to the percentage of total harvest by week from 2006 data.|
Notes: N/A indicates charter harvests would not be expected to be constrained.

Table 64 shows an estimate of the reduction in charter revenues when comparing future revenue under the status quo and each of the alternatives/options. The assumptions that went into making the estimates are shown below the table.

ADF&G has indicated that trip prices are not available from a single source. To provide an estimated average trip price, information from internet booking sites was used. The true average price for the areas may be higher or lower than those used, but is not possible to provide confidence intervals around those point estimates with the information available.

The average harvest per client was estimated using 2004 ADF&G data on the number of clients and the total charter harvest by area. Those calculations resulted in an estimated harvest per client of 25.81 lb in Area 2C and 31.46 lb in Area 3A. Annual variation in the size of halibut retained and the number of fish harvested per angler could result in future averages being different from these projections. Recent adoption of the 32" maximum size limit for one of the two halibut that may be retained could also affect future average harvest per client.

The estimated total change in Area 2C charter revenue ranged from $17 million to $117 over the 2009-2015 time period, depending on the charter growth rate and the option selected. Option 1(d) is projected to reduce revenue the most, when compared to the status quo, because it is the most restrictive. Option 1(c) is the least restrictive cap, under the 2006 Fishery CEY, so it results in the smallest decrease in revenue compared to the status quo.

Table 64 Estimates of total charter income reductions during the years 2009-2015 as a result of imposing harvest limits.

	Area 2C				Area 3A			
	Option 1		Option 2		Option 1		Option 2	
	Low	High	Low	High	Low	High	Low	High
a	$46.45	$106.68	$36.49	$96.72	$ 6.71	$25.84	$28.97	$51.57
b	$21.95	$ 81.32	$18.56	$76.98	$ -	$ 8.23	$12.16	$33.42
c	$17.00	$ 74.79	$ 8.77	$61.42	$ 0.02	$11.12	$ 7.62	$27.20
d	$56.98	$117.22			$21.72	$44.88		
e	$37.42	$ 97.65			$20.68	$43.69		
f	$30.97	$ 91.20			$22.47	$45.74		

Assumptions: The average client would harvest 25.81 lbs of halibut per trip in Area 2C (from 2004 ADF&G data, 1.75 Mlb of harvest divided by 67,803 clients) and 31.46 lbs of halibut in Area 3A (from 2004 ADF&G data, 3.67 Mlb of harvest divided by 116,670 clients). The average charter trip cost $280 in Area 2C and $225 in Area 3A. The NEI estimates of future charter harvests hold for 2006-2015. The Fishery CEY is constant at 2006 levels.

In Area 3A the overall changes in revenue are smaller than Area 2C. This is because the caps being considered for Area 3A are less constraining than in Area 2C because the charter sector percentage of the combined commercial and charter harvest in Area 3A is growing at a slower rate than in Area 2C. Recent trends in the Fishery CEY and discussions regarding whether the CEYs should be calculated using a coast-wide method to account for migration also seem to indicate that the Area 2C allocation could be even more constraining in the future. The following is excerpted from Clark and Hare (2006):

> *"Growing concerns about net migration from the western to the eastern Gulf of Alaska have led the staff to doubt the accuracy of the closed-area assessments that have been done for many years. A coastwide assessment with survey apportionment was presented to the IPHC, in addition to the closed-area assessments, and was used to calculate the available yield in each area. The two assessments produced very similar estimates of total abundance (total exploitable biomass about 400 M lb, total available yield about 80 M lb) but the distribution among areas was quite different, with the coastwide assessment showing more biomass and available yield in Areas 3B and 4 than the closed-area assessments and less in Area 2. Area 3A is about the same in both assessments."*

Finally, it is not appropriate to compare projected changes in charter revenues with projected changes to commercial ex-vessel revenue to determine which allocation is superior. Some of the reasons the comparison is not appropriate are:

- Both estimates only consider the gross revenue generated by the sectors. Net revenues would be a more appropriate comparision for the two sectors, but cost data are not available to generate those estiamtes. However, because of the composition and structure of the charter sector it is assumed that It is unable to generate producer surplus in the long-term. Commerial harvesters operating under an IFQ program, that did not have to buy all of their QS, will likely be able to generate some producer surplus
- Gross revenue estimates for the charter and commercial sectors do not consider the well-being of charter clients or halibut consumers. Criddle et al. (2003) found that charter clients and halibut consumers generated a larger consumer surplus than producer surplus generated by the charter operators and commercial harvesters.
- Policy makers may have social or political reasons to implement an option that does not generate the greatest economic benefits.

Commercial Sector: Under the status quo the charter sector harvests are projected to decrease in the near term and then increase as demand for charter trips increases. The near-term charter harvests reductions are expected to result from recently implemented management measures. However, growth in demand for charter trips is expected to increase sufficiently to offset those management measures in the longer-term and increase harvests above 2006 levels. The projections of charter harvest take into account management measures currently in place for the halibut fishery and the management measures that have been approved by the Council.

Increased charter sector harvests will decrease the amount of halibut available to the commercial IFQ fishery, since the two sectors share the amount of halibut that remains after the subsistence, non-charter, and halibut bycatch are deducted from the total CEY. The projected decrease in commercial harvest is assumed to be equal to the increase in charter harvest.

Projected Area 2C charter sector harvests indicate that without additional regulations the charter sector would annually increase their harvest by about 6.8% under the low growth option. Under the high growth option it is projected to increase charter harvest by about 11.7% per year. Assuming those charter harvest growth estimates, a stable fishery CEY, and the 2006 commercial ex-vessel price of $3.72 per pound, Table 65 shows the Area 2C projected change in the commercial allocation and ex-vessel revenue. The commercial sector would have reduced revenues of $1.03 million to $6.12 million in 2015, relative to 2006, depending on the charter harvest growth rate.

Table 65 Projected change in the Area 2C status quo commercial allocation and revenue

	Million Pounds		Ex-vessel Value	
Year	Low	High	Low	High
2007	0.413	0.189	$ 1,536,360	$ 703,080
2008	0.578	0.337	$ 2,150,160	$ 1,253,640
2009	0.479	0.139	$ 1,781,880	$ 517,080
2010	0.373	-0.083	$ 1,387,560	$ (308,760)
2011	0.259	-0.330	$ 963,480	$ (1,227,600)
2012	0.139	-0.606	$ 517,080	$ (2,254,320)
2013	0.009	-0.915	$ 33,480	$ (3,403,800)
2014	-0.129	-1.259	$ (479,880)	$ (4,683,480)
2015	-0.276	-1.644	$ (1,026,720)	$ (6,115,680)

Assumptions: Poundage decreases (increases) are the same magnitude as the charter increases (decreases). They changes were calculated as the difference between the projected charter harvest and the 2006 charter harvest. Ex-vessel revenue changers were calculated by multiplying the change in harvest by the reported 2006 ex-vessel price ($3.72 per pound).
Source: NEI charter harvest estimates.

The projected changes in ex-vessel revenue assume that the quantity of Alaskan halibut harvested does not impact the ex-vessel price. Herrmann and Criddle (2006) report that changes in the quantity of commercial Alaskan halibut landings have a relatively small impact on ex-vessel prices. They report that a 1% increase (decrease) in the quantity of Alaskan halibut landed will decrease (increase) the ex-vessel price by 0.09%, all else being equal. Given the magnitude of change in total halibut landings and the price-flexibility of halibut, for simplicity, the small expected increases in ex-vessel price were assumed away.

Beginning in 2014 the commercial sector allocation is projected to start being reduced from the 2006 level under the low growth rate and 2010 under the high growth rate. If charter client demand continued to grow at the assumed rate into the future and no additional harvest constraints were imposed on the charter sector, the trend in growth would continue beyond the years shown in the table.

Table 66 shows the projected Area 3A change in commercial harvest and ex-vessel revenue, using the same assumptions discussed for Area 2C. In Area 3A the growth in charter harvests are projected to result in the sector surpassing the 2006 harvest levels sooner than in Area 2C. A primary reason for the difference is that the management measures for 3A were not projected to reduce the sector harvests as drastically as in Area 2C, because the GHL overages were not as great. The importance of the short-term harvest reductions resulting from the recent management measures changes is even more apparent when the projected charter harvest growth rates are considered. Recall that in Area 2C the low and high growth rates were projected to increase the charter harvest by about 6.8% and 11.7% respectively. In Area 3A the charter sector harvest growth rate is only projected to be about 3.0% and 4.7% under the low and high growth rates, respectively.

Table 66 Projected change in the 3A status quo commercial allocation and revenue

	Million Pounds		Ex-vessel Value	
Year	Low	High	Low	High
2007	0.312	0.251	$ 1,154,400	$ 928,700
2008	0.202	0.076	$ 747,400	$ 281,200
2009	0.089	-0.107	$ 329,300	$ (395,900)
2010	-0.028	-0.299	$ (103,600)	$ (1,106,300)
2011	-0.148	-0.500	$ (547,600)	$ (1,850,000)
2012	-0.272	-0.710	$ (1,006,400)	$ (2,627,000)
2013	-0.399	-0.931	$ (1,476,300)	$ (3,444,700)
2014	-0.530	-1.162	$ (1,961,000)	$ (4,299,400)
2015	-0.666	-1.404	$ (2,464,200)	$ (5,194,800)

Assumptions: Poundage decreases (increases) are the same magnitude as the charter increases (decreases). They changes were calculated as the difference between the projected charter harvest and the 2006 charter harvest. Ex-vessel revenue changers were calculated by multiplying the change in harvest by the reported 2006 ex-vessel price ($3.70 per pound).
Source: NEI charter harvest estimates.

Area 3A charter harvests are projected to decrease the commercial sector harvest between 0.67 Mlb and 1.40 Mlb in 2015, relative to 2006. Assuming an ex-vessel price of $3.70 per pound, the commercial sector would have its revenue decreased between $2.5 million and $5.2 million in 2015, relative to 2006.

RAM data indicate that a total of 1,268 persons held QS in Area 3A at the beginning of 2006. The percentage reduction in IFQ pounds resulting from the QS they hold would impact them equally. For example, RAM data indicate that 24.95 Mlb of IFQ was allocated in 2006. A 0.67 Mlb reduction would result in each person being allocated 2.7% fewer pounds of IFQ, all else being equal. Persons who hold more QS would lose more pounds than persons who hold less QS, but each person would lose the same percentage of IFQ. Persons who had been issued 7 pounds of IFQ would still be issued 7 lb because their initial allocation was so small the percentage change and rounding do no effect the pounds issued. Persons who were issued 200,000 lb in 2006 would only be issued 194,600 lb of IFQ.

The projected reductions in the commercial sector allocation and ex-vessel value are also expected to impact halibut QS values. The value of QS depends on the expected future net revenues derived from the IFQ. Potential buyers of QS will take into account expected future changes in the revenue stream that results from increased charter harvests and reduce the amount it is willing to pay for QS (Criddle, 2006).

Reductions in net revenue will also cause marginal commercial QS holders to sell their QS in the long-run. The reductions in net revenue will make marginal producers unprofitable. Persons who are unable to make normal returns on their investment will be expected to sell their QS to persons with lower production costs, which could lead to additional consolidation in the commercial sector (Criddle 2006), up to allowable levels.

Modest changes in the stock abundance of halibut will result in more halibut being available to the commercial sector and will not affect the amount of halibut available to the charter sector. Because stock changes do not affect the amount of halibut available to the charter sector, it is not expected to impact the earnings of charter operators (Criddle 2006).

Increased demand for charter trips does not affect participants in the commercial fishery when the charter sector is constrained by a cap (Criddle 2006). The cap will limit the amount of halibut the charter sector can harvest, so the commercial allocation will not be reduced by increased charter harvests. However, the commercial sector would be directly impacted by a charter allocation that is larger than the charter sector

needs to meet their current client demand. That scenario would allow the charter sector to increase their harvest, as client demand increases, until they reach the cap. From that point forward, the cap would constrain the charter client harvests and the commercial sector would not be impacted by further increases in client demand.

Also, if the amount of halibut projected to go unused at the beginning of the year is not reassigned to the commercial sector, any excess allocation to the charter sector would reduce the commercial allocation more than is necessary. **The Council has not addressed whether their intent is to roll that halibut to the commercial sector or leave it unharvested; however, RAM Program staff is on record that reissuing all halibut IFQs in-season would be a formidable task**. The commercial sector would also be impacted if the charter sector was able to successfully lobby the Council to increase an allocation that becomes binding.

If the Council selects an alternative to cap the amount of halibut the charter sector may harvest, the reallocation of revenue from the charter sector to the commercial sector is limited. Table 67 shows estimates of the ex-vessel revenue the commercial sector is estimated to retain under each option. The assumptions that were used to calculate the estimates are provided at the bottom of the table. If those assumptions do not hold, the estimates will either be too high or too low. Ex-vessel price increases will cause the estimates to be too low. Changes in the Fishery CEY would affect the commercial results under both options. Decreases in the Fishery CEY would have the greatest impact on ex-vessel revenue under Option 2, because the commercial sector would have the total reduction. Conversely, an increase in the Fishery CEY would benefit the commercial sector the most under Option 2, because they would be allowed to harvest all of the increase. Finally, lower (higher) charter growth rates than used throughout this analysis would reduce (increase) the amount of additional revenue the commercial sector would generate from the various options.

Option 1(d) would minimize the reallocation of harvest from the commercial sector to the charter sector. Selecting that option, in this example, could result in the commercial sector generating between $19 million and $40 million more than under the status quo. Option 2(c) was projected to yield the smallest ex-vessel revenue change for the commercial sector. They would be better off by $3 to $21 million.

In Area 3A, the commercial sector is projected to retain an additional $15 million to $27 million under Option 2(a). That option is projected to provide the most benefit to the commercial sector. Option 1(b) is projected to only allow the commercial sector to retain a maximum of just over $4 million.

Table 67 Estimated retention of ex-vessel revenue by the commercial sector in total from 2009-2015

	Area 2C				Area 3A			
	Option 1		Option 2		Option 1		Option 2	
Alternative	Low	High	Low	High	Low	High	Low	High
a	$15.93	$36.58	$12.51	$33.17	$ 3.47	$13.37	$14.99	$26.68
b	$ 7.53	$27.89	$ 6.36	$26.40	$ -	$ 4.26	$ 6.29	$17.29
c	$ 5.83	$25.65	$ 3.01	$21.06	$ 0.01	$ 5.75	$ 3.94	$14.07
d	$19.54	$40.19			$11.24	$23.22		
e	$12.83	$33.48			$10.70	$22.60		
f	$10.62	$31.27			$11.62	$23.66		

Assumptions: A constant ex-vessel price of $3.72 and $3.70 per pound each year in Area 2C and 3A, respectively. The charter sector growth rates projected by NEI would occur. The Fishery CEY is stable at 2006 levels.

Some halibut IFQ holders also participate in other commercial fisheries. The revenues generated and the costs incurred in those fisheries will impact the overall profitability of the firm that holds IFQ. Data that are currently available does not allow the analysts to determine the extent of an IFQ holder's participation in other fisheries. It is not possible to link a QS holder with the licenses and permits they hold for other fisheries (i.e., Federal groundfish LLP, crab IFQ, or State permits for salmon and herring). It is also not possible to link vessel ownership with IFQ holders. Therefore, as a proxy, the harvest history of vessels, rather than persons, was used to compare activity in other fisheries. The harvest history of vessels used to land halibut in Areas 2C or 3A was derived from CFEC fish tickets. Those data were provided by NPFMC staff and included both pounds landed and ex-vessel value for species groups.

A summary of the annual ex-vessel value generated by vessels used to harvest Area 2C and 3A halibut, during the years 1995-2006, is presented in Table 68. The value of halibut harvested shows has increased over time, peaking in 2004 at just under $158 million. Groundfish ex-vessel values have show some variation, with the smallest values harvested between 1998 and 2002. Every other year over $80 million in groundfish was harvested. The ex-vessel value of salmon has declined from over $62 million in 1995 to about $39 million in 2006. Salmon revenues were weakest in 2002 and 2003, but have increase and been fairly steady from 2004 through 2006. The aggregation of all other species has been about $10 million per year after 1998, except in 2005 when the revenue was only $6 million.

In percentage terms, halibut revenues accounted for only 26% of the vessel's revenue in 1995. Their percentage from halibut revenue increased to 52% by 2004. Data were not available for 2005 or 2006.

Table 68 Nominal ex-vessel value of fish and shellfish harvested by vessels used to harvest halibut in Area 2C or 3A

Year	Vessels	Crab	Groundfish	Halibut	Salmon	Other	Total
		Ex-vessel Value (Millions of Dollars)					
1995	1,929	$35.93	$105.25	$65.95	$62.23	$16.69	$286.05
1996	1,821	$21.41	$93.87	$79.60	$45.23	$21.72	$261.84
1997	1,776	$19.85	$96.83	$104.63	$44.38	$16.28	$281.96
1998	1,487	$20.63	$64.80	$65.76	$38.63	$8.13	$197.94
1999	1,495	$28.52	$74.03	$110.96	$52.24	$10.01	$275.76
2000	1,440	$12.96	$88.34	$123.82	$34.96	$9.50	$269.58
2001	1,336	$13.01	$70.94	$104.14	$36.48	$9.83	$234.40
2002	1,270	$16.12	$67.95	$117.89	$22.28	$11.80	$236.04
2003	1,222	$16.89	$81.92	$150.71	$25.55	$11.38	$286.45
2004	1,190	$15.54	$83.10	$157.91	$37.22	$10.12	$303.90
2005	1,053	$17.68	$86.86	*	$36.32	$6.02	n/a
2006	1,112	$15.06	$92.73	*	$38.86	$10.66	n/a
		Percent of Total					
1995	1,929	12.6%	36.8%	23.1%	21.8%	5.8%	100.0%
1996	1,821	8.2%	35.8%	30.4%	17.3%	8.3%	100.0%
1997	1,776	7.0%	34.3%	37.1%	15.7%	5.8%	100.0%
1998	1,487	10.4%	32.7%	33.2%	19.5%	4.1%	100.0%
1999	1,495	10.3%	26.8%	40.2%	18.9%	3.6%	100.0%
2000	1,440	4.8%	32.8%	45.9%	13.0%	3.5%	100.0%
2001	1,336	5.5%	30.3%	44.4%	15.6%	4.2%	100.0%
2002	1,270	6.8%	28.8%	49.9%	9.4%	5.0%	100.0%
2003	1,222	5.9%	28.6%	52.6%	8.9%	4.0%	100.0%
2004	1,190	5.1%	27.3%	52.0%	12.2%	3.3%	100.0%
2005	1,053	n/a	n/a	n/a	n/a	n/a	n/a
2006	1,112	n/a	n/a	n/a	n/a	n/a	n/a

Source: CFEC Fishticket data provided by NPFMC staff
Note: Ex-vessel halibut values for 2005 and 2006 were not available from the NPFMC staff when the data were provided. When information was not available or could not be calculated the cell value is listed as n/a.

Table 68 also shows the total number of vessels used to harvest halibut in those areas. The number of vessels has decreased over time. The only years the number of vessels increased over the previous year

was 1999 and 2006. Overall, the number of vessels used to harvest halibut decreased from 1,929 in 1995 to 1,112 in 2006. That change represents a 42% decline in the number of vessels used. During that same period the Area 2C commercial halibut harvest increased from 7.77 Mlb to 10.47 Mlb (34.7%). The Area 3A halibut harvests increased from 18.34 Mlb to 25.38 Mlb (38.4%). So, even with an increase in harvest, the number of vessels used to harvest the fish declined.

Figure 14 shows the increase in average halibut harvest[60] per vessel in Areas 2C and 3A. The trend lines indicate harvest per vessel is increasing in both areas, with a decrease in 2001. Area 3A shows the largest increase going from about 15,000 pounds per vessel in 1995 to about 40,000 pounds in 2006. Area 2C vessels averaged about 7,000 pounds in 1995 and increased to about 15,000 pounds in 2006.

That trend to harvest more halibut per vessel seems to indicate that participants in the IFQ fishery are attempting to reduce costs by more fully utilizing the active vessels in the fleet. Cost reductions were thought to be an important result of allowing individuals to harvest a set percentage of the available halibut. Estimates of the actual reduction in costs cannot be provided, but the cost-savings could help off-set the forgone increase in ex-vessel revenue that has resulted from increased charter harvest.

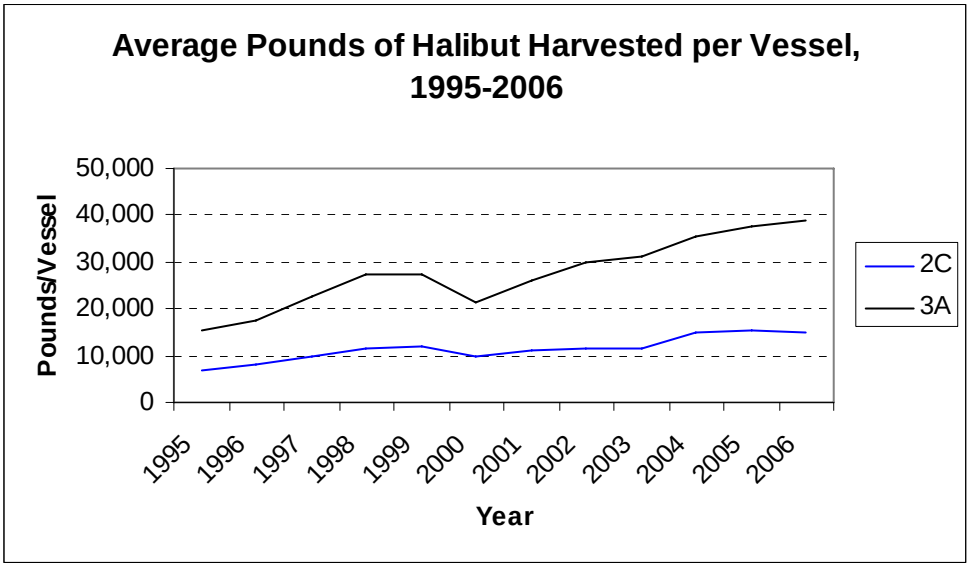

Figure 14 The average pounds of halibut harvested per vessel in the Area 2C and 3A IFQ fishery, 1995-2006

Charter Clients: Charter client trips will not be constrained by the amount of halibut available to their sector under the status quo. Charter operators will increase the number of trips they offer or take more clients per trip to meet increases in client demand under the moratorium. Because of the excess capacity that will exist under the moratorium and the number of permits issued, charter clients are expected to pay prices for trips that would allow the charter operators to earn normal profits over the next 10 years (NPFMC 2006a). Charter operators will not raise long-run trip prices to earn economic rents because of the competition that will exist for clients. However, in the unlikely event that the moratorium ever does become a constraint on the number of clients that could fish halibut, increases in trip demand could lead to higher trip prices.

Because of the structure of the charter industry and the competition for charter clients, charter operators are expected set trip prices at levels that eliminate excess profits. Since it is not expected to generate long-

[60] Data were provided by the RAM division of NMFS.

run producer surplus, the charter clients are expected to generate all of the long-run net benefits for the charter sector.

Criddle et al. (2003) found that, during 1997 in the Kenai Peninsula region, the net benefits to consumers of halibut charter trips averaged about $119 per trip for a non-resident and $83 for a resident. Those numbers represent the averages for 61,709 trips by Alaskan residents and 86,970 trips for non-residents. The study also found that total consumer benefits were increasing, but at a decreasing rate. Therefore, additional charter trips would tend to increase total consumer surplus, but at a decreasing rate. The smaller marginal consumer surplus from each additional trip would reduce the average net benefit per client. Charter clients are also expected to generate consumer surplus in other 2C and 3A regions. The magnitude of the surpluses in those areas has not been estimated. However, because non-residents generated more consumer surplus, on average, than residents, areas with a larger percentage of non-resident clients (i.e., Area 2C) may generate more consumer surplus per client.

Alternatives being considered by the Council to limit charter harvests will impact when some clients take a trip under a binding cap. Table 62 and Table 63 show estimates of the week the fishery is projected to close under each option. For non-residents, closures that occur before a person arrives in Alaska for their vacation would preclude the person from taking a trip. If halibut fishing is an important component of their trip, persons may try to schedule their trip earlier in the year. This could result in an increased number of trips earlier in the year. Persons who are unaware of the potential closure could be caught off-guard and be disappointed if they are unable to take a halibut trip. These potential clients may book another type of activity to replace the halibut trip.

Forcing some clients to take a trip earlier in the year than they prefer could reduce the consumer surplus they derive from the trip. There may be reasons they would want to take a halibut trip later in the year. Because that option is not available, they would need to take a trip that does not fit their schedule as well or forces them to forgo another activity. Either situation could reduce the amount a client is willing to pay for the trip.

We assume that the moratorium is not a constraint to persons booking a trip if they can take a trip before harvested is restricted, which is very likely given the excess capacity built into the moratorium and the allocation alternatives being considered. Competition for clients is expected to keep trip prices at a level that allows charter operators to only earn normal profits. All else being equal, the price of trips should not increase as a result of the caps, but some seasonal discounts could be eliminated. For example, discounts that have historically been available at the end of the season could be eliminated if the fishery is closed before mid-August.

Consumers of Commercial Halibut: The Pacific halibut resource is fully utilized by commercial and sport fishermen in Areas 2C and 3A, and the open-ended reallocation from the commercial halibut sector to the charter halibut sector continues to exist. Continued growth in the amount of halibut harvested by the charter sector will decrease the amount of halibut available to consumers. Decreases in the amount available will result in increases in halibut prices, all else being equal. As stated earlier, the ex-vessel price increases as a result of decreased supply are expected to be modest given the price-flexibility of halibut. Even though the price increases are expected to be relatively small, the combination of increased prices and reduced availability will decrease consumer surplus (Criddle 2006). The exact amount of the decrease surplus has not been estimated.

Communities: Economic activity resulting from the charter and commercial halibut fisheries generates income and employment for residents of the communities where the expenditures occur. The economic benefits under the status quo will likely differ from those under a binding allocation to the charter sector. However, changes in regional economic benefits generally do not cause changes in net national benefits.

The moratorium analysis provided information on the communities where charter trips terminated in 2004 and 2005 (NPFMC 2006a). Information was also provided in that analysis showing the percentage of Area 2C and 3A commercial halibut QS held by residents of various communities. Those tables indicated that in many cases the charter and commercial fisheries operate in the same communities. When a community is home to both charter and commercial activity, the reduction in expenditures by one sector will be offset, at least to some degree, by the increased activity from the other sector.

Under the status quo, the amount of personal income and jobs generated by the charter sector is expected to increase. The economic activity reported in the University of Alaska Fairbanks angler survey (Lee et al. 1998; Herrmann et al. 2001) and the ADF&G angler survey conducted in 1997 (Howe et al. 1998) was used to estimate regional economic impacts for the Kenai Peninsula Borough (Criddle et al. 2003). The results of that analysis showed that the 197,556 saltwater sportfishing trips in 1997 generated $28.5 million in expenditures, $12 million in personal income, and 822 jobs. These values over-estimate the impact of the halibut charter sector in the Kenai Peninsula because the values include non-guided fishing trips. However, the impacts do not account for the regional impacts generated by trips in other Area 2C and 3A communities. That analysis also provides estimates of the impact that changes in expected charter harvest and increases in trip prices will have on compensating variation, expenditures for sportfishing trips, personal income, and employment. Because the status quo is not expected to impact trip prices, that information is more relevant under a management system that alters those trip attributes.

The options that limit the harvest of charter clients could limit the number of trips taken. When the number of trips that can be taken is capped, the charter sector will shift their trips earlier and earlier in the year. Shifting the time of year when trips are taken will benefit those communities that are better suited to provide trips earlier in the year. For example, Table 69 shows that Area 2C communities like Sitka, Craig, and Elfin Cove started providing trips to anglers during the 20th week of the year. Juneau and Gustavus, on the other hand, began providing a substantial quantity of trips about 3 weeks later. Other smaller and more remote communities like Angoon and Port Alexander did not begin providing trips to clients until the 28th week of the year. This trend seems to indicate that the smaller and more remote communities may have more difficulty shifting activity to earlier in the year. Those communities could be at a disadvantage to other communities that tourists can access through the cruise lines or larger regional airports.

Table **70** shows that in Area 3A, the larger halibut ports and those on the road system seem to start providing trips before communities that are more remote. This may be the result of local residents driving to those areas from Anchorage and Fairbanks to take early season trips. The communities that are more remote need to attract clients from the outside. Those individuals may be seeking more than just a halibut trip. They may be seeking the cultural experience of visiting places that most tourists do not see. The halibut trip is a part of that overall experience. Getting these individuals to alter the timing of their trip to have access to halibut may be difficult. If they cannot attract clients earlier in the year, the early closures that result from the harvest caps could have a greater impact on their charter industry.

Table 69 Area 2C communities where halibut charter trips terminated in 2006, by number of anglers and week of the month

	Week Fished During 2006																								
Port of Landing	**7 to 17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40 - 42**	**Total**
ALL OTHER PORTS		4	4	4	25	23	45	93	189	163	140	112	202	148	137	102	186	184	90	32	44	11	9		1947
HAINES											5	19	23	42	19	29	23	7	6	10		9	3		195
FISHERMANS BEND									14	20		18		24	12	26	36	12	27	16					205
TENAKEE									18	8	3	8		14	14	22	6	24	21	44	41	2			225
SURESTRIKE						2	8	17	18	20	16	16	21	17	25	18	20	20	20	11					249
SARKAR COVE							8	10	28	24	12	28	20	16	20	24	20	27	27						264
CLOVER BAY										41	30	37	12	27	14	28	36	23	25	4					277
POINT BAKER						8	18	21	24	24	23	11	17	20	16	12	22	24	31	8	14	6			299
BAY OF PILLARS									16	28	12	49	40	57	10	61	27								300
GULL COVE				6	12	22	19	27	20	26	9	19	33	15	12	16	16	12	20	26	20	6			336
SEALING COVE						7	34	43	40	36	18	15	33	27	26	13	18	3	5	15	12				345
PORT PROTECTION		2	8	15	5		8	47	24	10	8	20	23	33	37	22	7	39	4	4	19	9	6		350
CANNERY COVE						24	22	28	22	24	32	27	27	16	26	29	25	37	18	14					371
PORT ST NICHOLAS						12		38	35	23	31	34	32	39	42	50	36	38	15						425
SALTERY COVE								6	34	42	42	42	27	30	34	16	40	24	36	36	24	16			449
ANGOON										13	30	63	53	47	65	46	44	67	40						468
PORT ALEXANDER										44	60	50	64	59	64	51	41	16	26		18	2			495
ROCKY POINT						2	41	25	39	33	41	41	50	55	52	50	43	32	30						534
PELICAN				16	13	9	19	35	51	40	63	37	27	66	30	39	38	47	5						535
THOMAS BASIN				16	17	24	41	48	37	41	43	29	29	28	40	40	34	19	19	20	25	20			570
WHALE PASS (POW - SE)							28	45	38	38	48	48	73	71	51	20	37	32	38		4				571
BARTLETT COVE	9				43	93	52	7				29	4		19	27	11	11	10	33	116	104	68		636
S KAIGANI BAY								10	56	30	33	76	71	72	66	63	62	56	50	12					657
FALSE ISLAND								59	31	59	71	30	74	60	49	64	56	38	46	9	4	8			658
THORNE BAY							13	6	15	57	45	19	79	60	80	92	91	76	47	34	8	19	4	9	754
SPRUCE MILL NEW FLT			4	2	12	30	32	31	25	40	36	45	53	53	59	67	39	39	59	19	39	35	28	8	755
YES BAY							8	43	36	47	60	39	75	58	51	30	74	94	37	19	38	39	18		766
WRANGELL		12	5	7	23	46	16	26	35	45	44	72	100	106	40	62	67	65	7	2		6	10		796
KNUDSON COVE				4	11	28	37	40	46	68	84	39	79	33	48	44	76	71	84	28	26	16		2	864
SHELTER ISLAND						10	44	54	64	73	40	75	62	62	42	74	70	70	67	41	39				887
WARM SPRINGS BAY			3	38	30	27	8	70	69	59	62	48	55	29	34	33	38	28	47	36	31	47	55	40	887
SALMON FALLS								37	12	68	80	90	78	94	76	52	92	87	54	53	15				888
COFFMAN COVE						6	13	2	8	32	123	75	110	86	118	106	91	85	38	8	8				909
CLOVER PASS							27	25	49	52	108	95	100	78	87	91	80	87	99	51	33	16	7	4	1089
PYBUS POINT						24	6	59	89	101	114	108	85	101	99	79	54	82	72	49					1122
JUNEAU						10	53	26	44	78	121	149	77	133	90	88	153	116	59	47	15				1259
KILLISNOO								6	55	72	96	101	149	129	150	123	83	154	105	59	29	28	39		1378
SALMON LANDING	4		6	14	28	57	47	73	108	108	126	91	113	82	120	118	94	88	67	57	57	56	16	14	1544
SPORTSMAN COVE								24	150	144	144	124	97	96	132	106	104	122	158	150	100	110	24		1785
KLAWOCK		4		4	8	4	3	40	103	133	158	134	146	208	176	160	206	114	106	32	17	23	9		1788
AUKE BAY					7	22	62	108	127	175	183	156	162	196	217	274	201	238	149	103	26	29	18		2453
HOONAH				6	41	70	104	145	147	191	159	175	206	182	108	204	166	189	132	150	125	103			2603
PETERSBURG				6	17	74	80	138	223	167	212	186	159	251	142	191	164	181	132	78	118	84	46		2649
GUSTAVUS					4	8	104	272	228	213	271	233	295	303	320	317	289	390	227	177	66	16			3733
KETCHIKAN	2		4	25	10	49	101	165	202	261	417	344	347	446	414	446	367	320	276	222	128	43	44	16	4649
ELFIN COVE				26	166	209	284	299	357	398	374	305	280	303	316	348	313	297	284	290	52		4		4905
CRAIG		4	21	40	39	135	179	257	403	596	697	594	779	852	730	772	701	592	290	121	32	12	14	14	7874
LODGES*	8		8		22	243	477	639	715	769	784	874	887	811	821	721	865	789	653	251	12				10349
SITKA	5	8	6	190	1030	1440	1812	2298	2210	2432	2342	1780	2316	2254	2141	1712	2236	2122	1579	1127	442	152	50	27	31711
TOTAL	28	34	69	419	1563	2718	3853	5442	6254	7166	7650	6809	7844	7989	7491	7178	7598	7288	5437	3498	1797	1027	472	132	99758

*WATERFALL, EL CAPITAN, DOVE ISLAND LODGE, AND SHELTER COVE LODGE

Source: ADF&G 2006 Logbook data for halibut charter trips

Table 70 Area 3A communities where halibut charter trips terminated in 2006, by number of anglers and week of the month

	Week Fished During 2006																									
Port of Landing	**3 to 17**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40 to 50**	**TOTAL**
ALL OTHER PORTS		5	2	1	14	24	10	29	44	78	99	80	108	101	117	187	194	187	182	112	153	77	41	13	5	1872
RASPBERRY ISLAND									3	12						11	19	21	29	37	26	16	17		9	200
AMOOK PASS												15	5	20	25	30	12	12	13	20	41	10	2			205
PASAGSHAK BAY							16			9	15	4	6	5		18	10	12	13	16	17	11	22	33	13	220
PORT WAKEFIELD												18	6					35	47	52	56			6		220
PARKS CANNERY										10	35	16	8	15	2	12	4	11	24	24	19	32	12			224
ANTON LARSEN BAY		6				2		4	12	19	35		3	36	49	23	9	13		9	11	11	15	4	2	263
ZACHAR BAY									20	18	21	12	6	65	5	11	1	4	25	20	27	28	3	2	8	276
UGAK BAY								6	36	30	24	22	15		12	17	32	9	31	11	14	23	13			295
SELDOVIA							23	29	25	48	50	42	41	30	72	65	72	31	20	3	20		4		14	589
CORDOVA	4					2	19	16	14	48	43	47	48	44	10	50	32	37	36	46	59	32	7	14	8	616
MILLERS LANDING					3	14	6	43	33	55	52	83	108	104	57	60	115	75	63	54	39					964
OLD HARBOR					44	60	50	73	51	60	105	68	71	56	24	46	38	104	79	46	43	24	4			1046
PORT LIONS						39	45		65	94	70	91	80	82	49	99	84	97	115	136	76	78	5		22	1327
LARSEN BAY								68	64	86	140	121	109	105	88	80	102	160	143	167	81	53	16	13	161	1757
HAPPY VALLEY				35	102	152	162	154	82	52	103	118	130	165	134	54	42	113	89	103	7	12				1809
NINILCHIK				26	70	148	235	111	148	176	193	149	181	178	226	194	162	113	64	60	26	17				2477
WHITTIER				13	51	78	89	176	61	169	198	263	255	156	192	262	162	161	101	114	102	39	72	20	9	2743
YAKUTAT	34	41	37	59	50	49	62	79	131	202	159	284	220	157	40	61	85	194	223	204	190	219	246	120	55	3201
KODIAK	5	3	8		41	62	86	84	129	206	170	301	338	380	282	430	423	397	391	340	323	172	190	114	52	4927
VALDEZ	7	6	5	46	36	148	203	242	210	328	537	632	742	575	442	497	387	301	190	181	119	13	10		4	5861
ANCHOR POINT			6	119	74	154	260	237	258	443	689	482	930	738	1219	638	640	402	333	257	244	57	6			8186
DEEP CREEK			55	505	681	1311	1777	1569	1453	1437	1654	1383	1788	1271	2414	1440	1269	731	689	598	312	68				22405
SEWARD	116	33	82	153	285	505	991	1207	948	1564	2040	2349	3000	2819	1624	2611	2482	2924	1398	1396	1025	298	194	51	25	30120
HOMER	117	164	138	334	472	906	1408	1952	2267	3076	3454	3852	4352	4229	5599	3797	4011	2581	2911	1793	1228	987	481	212	157	50478
3A Total	283	258	333	1291	1923	3654	5442	6079	6054	8220	9886	10432	12550	11331	12682	10693	10387	8725	7209	5799	4258	2277	1360	602	553	142281

All other ports includes: Afognak, Ak Wilderness Safaris Lodge, Alderwood Retreat, Amook Island, Anchor River, Blue Dory Lodge, Chenega Comfort Cove, Cranberry Creek, Dog Bay Harbor, Ellamar, Geographic Harbor, Halibut Cove, Hidden Basin, Icy Bay Lodge, Iliamna, Iliamna Bay, Iron Creek, Jakalof Bay, Kasitsna Bay, Kenai, Kiliuda Bay, Kukak Bay, Lowell Point, Ouzinkie, Poohs Landing, Port Vita, Port William, Rainbow Bay Resort, Ravencroft Lodge, Seal Bay (Sc), Selief Bay, Silver Salmon Creek, Tutka Bay, Uganik Bay, Uyak Bay, Whale Pass (Sc), Williamsport.
Source: ADF&G 2006 Logbook data for halibut charter trips

Self-guided anglers and subsistence harvesters: Continuation of the status quo is not expected to impose costs or provide additional benefits to self-guided anglers or subsistence harvesters. Because halibut removals by those two groups are unrestricted and accounted prior to determination of the commercial allocation, the amount of harvest by the commercial sector does not impact the halibut available to these groups. Therefore, continued growth in charter harvests does not impact these groups.

Imposing a limit on the amount of halibut charter clients may harvest could result in some individuals that have access to a private boat fishing for halibut without a guide, when they would have used a guide service had it been available. Increasing effort in the non-guided sector is more likely to occur in Area 3A where the percentage of clients from Alaska is greater than in Area 2C. Alaska residents are more likely to know someone that would allow them to fish on their boat than a visitor who came to Alaska on a cruise. If additional effort in the non-guided sector results in that sector harvesting more halibut, it could reduce the amount of halibut available to the charter and commercial sectors.

Action 2 Alternative 2 (Compensated Reallocation)

Both the charter and commercial halibut provide substantial economic benefits to the State of Alaska, State of Washington, and the Nation. Waters and Chang (2007) reviewed nine different studies that have estimated the various types of economic contributions that constituent groups involved in halibut recreation make to the economy. The analysis concluded that:

- The current set of economic impact studies for the halibut fishery does not allow for a direct comparison of the economic impact of the guided recreational and commercial sectors. The meta-study found that guided anglers are expending an average of approximately $429 per dollar in 2005 dollars which translates into $596 in total economic output per day of expenditures. However, more detailed data by angler type (resident vs. non-resident) and by area are not available. At the same time, commercial harvesters generate between total output of between $1.682 and $1.906 per dollar of ex-vessel value. The only study the tries to estimate a benefits-maximizing allocation between the two sectors is Criddle (2004). While this study goes the farthest to answering the allocation from a benefits-maximizing standpoint halibut prices and recreational demand have increased substantially since the study was published and the time period when the recreational data was collected.

- Maximizing net benefits and to the nation does not necessarily mean maximizing revenue to local communities and economics. Decisions which maximize national net benefits "may leave communities in the cold." Economic impacts are more important to local communities than national net benefits as impacts represent a direct flow of funds to communities.

Waters (2007) is included as Appendix III.

The current options are still largely in an elements and options form as opposed to defined programs. This lack of definition makes a quantitative estimate of the economic and socioeconomic impacts of the alternatives difficult. Given the difficulty of a quantitative estimate, this section will discuss the most likely economic and socioeconomics effects associated with Option 1 and Option 2 of Alternative 2 in a qualitative form. These economic and socioeconomic effects associated with Alternative 2 of Action 2 could include:

Diminishment of the Long-term Uncompensated Reallocation

A "forward looking" compensated reallocation that purchases enough QS to fund charter industry growth for several years and becomes the basis for a long-term solution has the potential to end or diminish the recent long-term uncompensated reallocation of halibut harvest from the commercial sector to the charter sector. Ending this uncompensated reallocation should provide specific benefits within the QS, including increased certainty about the future value of QS and the stability of the halibut fishery. These benefits were noted in NPFMC (2007b) and NPFMC (2007c).

Inter-Industry Fund Transfer

A primary effect of the compensated reallocation and any subsequent long-term solution is the large inter-industry fund transfer. As previously noted in Section 2.5.2, the amount of QS that must be purchased to support future charter industry growth and assuming an initial allocation equal to the GHL will be equal to several tens of millions of dollars. This reallocation has the potential to provide current QS holders in the commercial sector large increase in the value of their QS. QS holders who sell during the compensated reallocation could potentially earn large profits if they sell their QS units for more than they paid for them.

QS Price Effects

The authors expect that the price for QS will increase as market participants become aware of the magnitude of the compensated reallocation. A reallocation based on the current GHL levels and plans for future demand in growth will likely require a reallocation of QS equal to a significant portion of the average annual QS trading volume over the past several years. Any purchase or aggregate set of purchases of this size will disrupt the market and increase prices for QS units. Data from NMFS RAM Program shows that the increase in QS prices may have already begun as 2007 QS prices for arm's-length transfers are running substantially higher than 2006 prices for both 2C and 3A QS.[61] As noted above, increases in QS will benefit existing QS holders, but make it more difficult for new commercial fishermen to enter the market. Additionally, further increases in QS prices may raise the total cost of the reallocation and the "per unit" fees needed to pay back any debt above those calculated in this analysis.

Table 71 Average Price per QS Unit for Arms Length Transfers, 2000-2007

	Weighted Average QS Price	
Year	2C	3A
2000	$1.46	$1.42
2001	$1.31	$1.20
2002	$1.28	$1.26
2003	$1.56	$1.27
2004	$2.39	$2.52
2005	$3.86	$2.87
2006	$3.20	$2.58
2007	$6.11	$4.28

Source: NEI estimates based on NMFS RAM Program data (2007).

[61] A number of factors including speculation, declining biomass in Area 2C, and upcoming changes in block and sweep up rules through Omnibus IV may be affecting QS prices. The changes to block regulations will make QS rules more flexible and hence make QS more valuable to holders.

Long Term Industry Changes

Both options in Action 2 Alternative 2 have the potential to result in long-term changes in both industries; particularly under Option 2. Option 2 would force charter operators to decided whether the QS that they own, or could own, would make them more money converted into GAF or sold to another commercial or charter operator. If the most profitable use for QS is in the commercial sector, then many potential charter QS holders could be out-competed for QS units on the open market or could decide to sell their QS units. This decision, in aggregate, would result in a shrinking of the charter fleet. The same potential change exists for the commercial fleet. If long-term returns are higher in the charter fleet than the commercial fleet, then charter operators could purchase a larger and larger share of the available QS, which could then result in a decline in the number of commercial operators fishing for halibut. Recent trends show long-term growth in the halibut charter fleet, but this growth occurred in the absence of any connection between that the growth and the cost of QS units. Consequently, it is difficult to say what the long-term trend would be for either industry with a long-term inter-sector exchange mechanism for QS.

Differential Effects on Communities

Overall, the estimated effects of the compensated reallocation and a long-term solution should be positive on a national net benefits scale. However, the compensated reallocation could have differential effects on communities depending on the relative importance of the commercial and charter fleets, how operators in each sector respond to the compensated reallocation, and how effectively the compensated reallocation is executed. For example, a community heavily dependent on the commercial fleet when many operators sell their QS entirely could see a quick infusion of cash from the compensated reallocation, but a long-term decline in economic activity associated with commercial fishing. Alternatively, communities with a developing commercial fleet could see the development of their fleet slowed by high QS prices. Communities that host a higher than average share of the charter fleet will be especially vulnerable to the effects associated with a poorly executed reallocation. For example, if the compensated reallocation takes several seasons and the charter fleet does not have enough QS to cover the demand for charters, then it is likely that the industry will face management restrictions, which could result in lower business incomes and business failures. These changes would in turn result in lower spending throughout communities.

2.6.2 Enforcement Issues and Recordkeeping and Reporting Requirements

During the development of this analysis, agency staff convened once by telephone to provide preliminary guidance and comments on record keeping, implementation, and enforcement issues. A supplement to this analysis will be provided at the October Council meeting. This section will be completed after the Council has provided necessary clarifications as to its intent for numerous proposed program features under both actions.

2.6.3 Effects on Net Benefits to the Nation

The lack of a defined set of alternatives with specific program features makes a quantitative estimate of the net benefits to the nation impossible at this point. That said, net benefits to the nation are likely to be maximized by a system that provides the maximum total net benefits to sport fishermen, commercial fishermen, and consumers. Criddle (2004) provides a simulation-optimization model of the North Pacific commercial and sport fisheries for Pacific halibut using data from studies conducted in the late 1990s. The paper noted that:

> *If rights can be defined in a way that is meaningful across use and nonuse values and to the extent that the freerider problem can be eliminated, self-interest and transferability will*

encourage the movement of quota shares and spatial use rights to the use and nonuse activities that generates the greatest marginal net benefits, ensuring a maximization of overall net benefits.

Hence, any system that combines self-interest and the transferability of QS will improve net benefits to the nation over the current status quo. The current status quo does not allow for transferability between fishing sectors and creates a disconnect between the self-interest of charter operators and the greatest marginal net benefit to the nation associated with halibut harvest as regulated through the QS program. To the extent that the considered alternatives connect these factors, then the net benefits to the nation will increase over the status quo. The largest component of Net National benefits is expected to come from the consumers of halibut and the charter clients (Criddle, 2004). Neither charter operators nor commercial fishermen that purchased their quota would generate a producer surplus, because it would be captured in the price paid for the quota.

2.6.4 Summary and Conclusions

Action 1 Alternative 2

The COUNCIL has been working to resolve the conflicts that exist between various groups that harvest halibut from IPHC Areas 2C and 3A since the early 1990s. While the Council has made progress in setting the groundwork to help resolve these conflicts, some of the major obstacles still remain. One of the primary obstacles that exists is the division of halibut between the commercial halibut fishery and the guided sport fishery. The GHL that is currently in place sets a target percentage split of the halibut that is available to both the commercial and charter sectors. However, the GHL has no regulatory mechanism to halt charter harvests when their target catch is reached. The allocation in this amendment is designed to set a harvest limit that will result in the charter sector being required to stop fishing when they harvest their portion of the halibut.

Two general methods are being considered by the Council to divide the available halibut between the commercial and charter sector. The first set of alternatives allocates a percentage of the available halibut to charter sector and the commercial sector. Because the allocations are based on a percentage of the halibut available to the two sectors, fluctuations in biomass or changes to the Fishery CEY will change the amount of halibut the two sectors may harvest. If the Fishery CEY increases (decreases), both sectors will be allowed to harvest more (less) halibut. The second set of alternatives would allocate the charter sector a specific number of pounds. Because their allocation is a fixed number of pounds, changes in the Fishery CEY do not change their allocation. Instead, the commercial sector would absorb any increase (decrease) in the halibut available to the two sectors. The Council is also considering a suboption under the fixed poundage allocation to the charter sector alternative. The result of the suboption is to increase or decrease the charter sector's "fixed" allocation in a step-wise fashion when the CEY changes a predefined amount. The affect of the suboption to have the charter sector's allocation float with changes in the Total CEY. So including the suboption causes the second set of alternatives to more closely follow the percentage based allocation than the fixed poundage allocation.

The specific alternatives being considered by the Council are listed below, along with the allocation that results from the alternative. As stated earlier, the Option 1 alternatives calculated the charter allocation as a percentage their historic harvest relative to the combined commercial and charter harvest. Six different combinations of years were used to calculate the percentages of the Fishery CEY the charter sector would be allocated. The fixed poundage allocation used three different combinations of years to calculate the number of pounds the charter sector would be allocated. Finally, the stair-step up and down suboptions define the points at which CEY changes trigger a specific change in the charter allocation.

For any of the alternatives being considered to be effective, the management agency with in-season management authority over the charter sector must have adequate in-season harvest data to restrict charter harvest when their allocation is taken. If the charter sector is allowed to continue harvesting halibut after their allocation is taken, the result of this amendment would be similar to the GHL that is currently in place. The allocation would be a target amount, but by itself has no impact on the amount of halibut the charter sector could harvest.

The ADF&G Sport Fish Division modified their logbook requirements in 2006. Those changes require weekly reporting of all halibut harvested by each charter client. Weekly reporting of harvest by charter client is expected to increase the timeliness, accuracy, and precision of the halibut data. Because of the changes to the logbook reporting requirements, it is assumed that the management agencies will have sufficient information to project when the charter sector's allocation will be reached and limit the retention of halibut at that time. If the logbooks prove to be inadequate, additional reporting requirements would need to be implemented to enforce the intent of this action.

Status Quo: An important component of the Status Quo analysis is the projections of future charter harvests. Northern Economics, Inc. (NEI) provided estimates of the annual charter harvest for the years 2006-2015. To generate these estimates several assumptions needed to be made.

NEI projected future charter harvests through 2015, using the status quo management measures that are currently in place or have been approved by the Council but not yet implemented, for both Area 2C and Area 3A.

The projections use both a long-term (i.e., 1995-2006) industry growth rates to create a lower expectation of future harvests and a five-year (i.e., 2001-2006) average growth rates to create a higher projection of future harvests.

Charter growth is not linear and the industry has experienced years where total harvest declines from previous years. Thus, these projections represent projections of trends based on averages.

NEI estimates of future Area 2C and Area 3A charter harvests are show in Table 72. In Area 2C the projected harvest decreases each year from 2006 to 2008. The decrease is a result of the new harvest restriction imposed by NMFS and the Council on charter harvests during 2007. From 2008 through 2015 the projected charter harvest increases by about 6.8% per year under the low growth rate and 11.7% per year under the high growth rate. In Area 3A, the charter harvest is projected to only decrease from 2006 to 2007. This projection could change if the Council moves forward with the Area 3A measures to limit charter growth that are currently under consideration. The projected growth rate for Area 3A is about 3.0% per year from 2007 through 2015 under the low growth rate. The higher projected growth rate increases the annual estimates by about 4.7% per year.

Table 72 Projected Charter Harvest, 2006-2015 (Mlb)

	Area 2C				Area 3A			
	Projected Charter Harvest Mlb)		Pounds Needed Above GHL (Mlb)		Projected Charter Harvest Mlb)		Pounds Needed Above GHL (Mlb)	
Year	Low Average	High Average	Low Average	High Average	Low Average	High Average	Low Average	High Average
2006	2.035	2.035	0.603	0.603	3.947	3.947	0.297	0.297
2007	1.622	1.846	0.190	0.414	3.635	3.696	-0.015	0.046
2008	1.457	1.698	0.025	0.266	3.745	3.871	0.095	0.221
2009	1.556	1.896	0.124	0.464	3.858	4.054	0.208	0.404
2010	1.662	2.118	0.230	0.686	3.975	4.246	0.325	0.596
2011	1.776	2.365	0.344	0.933	4.095	4.447	0.445	0.797
2012	1.896	2.641	0.464	1.209	4.219	4.657	0.569	1.007
2013	2.026	2.950	0.594	1.518	4.346	4.878	0.696	1.228
2014	2.164	3.294	0.732	1.862	4.477	5.109	0.827	1.459
2015	2.311	3.679	0.879	2.247	4.613	5.351	0.963	1.701

Source: NEI Estimates, 2007

Based on the 2006 GHL, the Area 2C charter sector is projected to exceed the GHL every year. By 2015, they are projected to be over the GHL by 0.88 Mlb to 2.25 Mlb, depending on their harvest rate growth. In Area 3A, under the slower growth they are projected to exceed their allocation every year starting in 2008. By 2015, the charter sector is projected to be from 0.96 Mlb to 1.70 Mlb over their GHL. Because of the way the commercial catch limit is set the increases in the charter harvest will reduce the commercial allocation by an equal amount, all else being equal.

Option 1: The Option 1 alternatives set the charter allocation as a percentage of the halibut available to the commercial and charter sectors. Because the charter allocation is set as a percentage of the Fishery CEY, any changes in the Fishery CEY will change the pounds of halibut available to the charter sector. If the Fishery CEY increases the charter sector will share the increase with the commercial sector at the same percentage as their allocation. For example, of the fishery CEY increases by 1 Mlb and the charter sector is allocated 15%, the increase would result in the charter sector being allowed to harvest an additional 150,000 pounds of halibut. Conversely, a decrease of 1Mlb would decrease the charter allocation by 150,000 pounds. Fishery CEY fluctuations have always concerned both the commercial and the charter sectors, but the charter sector has argued that they book clients a year in advance and cannot always predict the CEY changes. If the Fishery CEY dropped dramatically, the may have a client that would not be allowed to retain halibut. That would hurt the businesses reputation and because word of mouth advertising is important, would reduce future demand for their service.

Six different alternatives are being considered under Option 1. The only alternative that generates a smaller allocation for the charter sector for Area 2C than the 13.1% under the Status Quo (Option 1(a)), is Option 1(d) using the GHL allocation formula as a percentage of 2004. It yields an allocation of 11.7%. All of the other alternates generate an allocation to the charter sector that is larger than the current GHL. The largest charter allocation is calculated using Option 1(c) (17.3%).

In Area 3A, the Status Quo (Option 1(a)) results in the charter sector being allocated 14.0% of the combined commercial and charter halibut. Only the alternatives based on 125% of the average charter harvest using the GHL formula from 2000-2004 (Option 1(d) and 125% of average charter harvest using the GHL formula from 2001-2005 generate a larger charter sector allocation. The other three alternatives all yield a charter sector allocation of 12.7% to 12.8% for the combined charter and commercial halibut.

When the various charter allocations are compared to the projected future charter harvest under the Status Quo, it provides an estimate of when the charter sector would exceed their allocation. To generate those estimates the future charter harvests provided by NEI were compared with the projected charter allocation[62]. Those estimates show the year the charter sector is expected to exceed their allocation and the amount they are over or under. The assumptions build into the estimates include:

- The growth in charter harvests in 2007-2015 will follow the projections made by Northern Economics, Inc. If those estimates over estimate the charter sector harvests, the charter sector could stay under their allocation longer than reported in Option 1 tables. If the estimates are too small, the charter sector could exceed their allocation sooner than reported.
- The total amount of halibut available to the charter and commercial IFQ sectors in IPHC areas 2C and 3A were assumed to be 9.942 Mlb in Area 2C and 29.85 Mlb in area 3A. Because the 2007 CEY is smaller than the 2006 CEY in area 2C, it is anticipated that the estimates for Option 1 would under estimate the years the charter sector remains under their harvest limit. Because the2007 CEY was larger than 2006, the area 3A, it may take longer for the charter sector to exceed their allocation than shown in the Option 1 tables. Option 2 is not be affected by the CEY change unless the suboptions are also included.

Table 73 shows projections of the percentage of the combined charter and commercial allocation the charter sector will be over (under) their allocation by year. The shaded cells show the years the charter sector is projected to remain within their allocation and the cells that are not shaded indicate the charter sector exceeded their allocation. Percentages shown in the table can be added to the initial allocation percentage to show what the initial allocation would need to be for the charter sector to stay within their allocation. For example, in Area 2C the cell under low charter growth for Option 2(a), during 2015 is 10.2%. That percentage indicates the charter allocation would need to be increased from 13.1% to 23.3% for the charter sector to stay within their cap. The shaded cells show the percentage of the halibut available the charter sector would not use at the end of the year.

The information in the table shows that the charter sector is projected to exceed their 2C allocation under a high growth rate by 2008 in every alternative. Under the low growth rate, Option 1(c) is projected to allow the charter sector to stay under their allocation until 2011.

In Area 3A, Options 1(a) through Option 1(c) are much less of a constraint than the other alternatives. Under Options 1(a) through Option 1(c) using the low growth rate, the charter sector is either not constrained by their allocation or the do not reach their proposed harvest limit until 2012. The higher growth rate causes the charter sector to exceed their allocation sooner. But, the charter sector is still within their cap until 2010 to 2013, depending on the alternative selected.

[62] Note that ADF&G Sport Fish Division has recently revised the 2006 charter harvest estimates. The revised estimates have not been included in these calculations, due to time constraints. They are anticipated to be used to revise the estimates in future drafts of this analysis.

Table 73 Projections of when and by how much (in percentages) the Option 1 allocations will be exceeded

	% Over Alt. "a"		% Over Alt. "b"		% Over Alt. "c"		% Over Alt. "d"		% Over Alt. "e"		% Over Alt. "f"	
Year	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
IPHC AREA 2C												
Initial Allocation	13.10%		16.40%		17.30%		11.70%		14.30%		15.10%	
2006	7.4%	7.4%	4.0%	4.0%	3.2%	3.2%	8.8%	8.8%	6.2%	6.2%	5.3%	5.3%
2007	3.2%	5.5%	-0.1%	2.1%	-1.0%	1.3%	4.6%	6.9%	2.0%	4.3%	1.2%	3.4%
2008	1.6%	4.0%	-1.8%	0.6%	-2.7%	-0.2%	3.0%	5.4%	0.4%	2.8%	-0.5%	1.9%
2009	2.6%	6.0%	-0.8%	2.6%	-1.7%	1.8%	4.0%	7.4%	1.4%	4.8%	0.5%	3.9%
2010	3.6%	8.2%	0.3%	4.9%	-0.6%	4.0%	5.0%	9.6%	2.4%	7.0%	1.6%	6.2%
2011	4.8%	10.7%	1.4%	7.3%	0.6%	6.5%	6.2%	12.1%	3.6%	9.5%	2.7%	8.6%
2012	6.0%	13.5%	2.6%	10.1%	1.8%	9.3%	7.4%	14.9%	4.8%	12.3%	3.9%	11.4%
2013	7.3%	16.6%	3.9%	13.2%	3.1%	12.4%	8.7%	18.0%	6.1%	15.4%	5.2%	14.5%
2014	8.7%	20.0%	5.3%	16.7%	4.5%	15.8%	10.1%	21.4%	7.5%	18.8%	6.6%	18.0%
2015	10.2%	23.9%	6.8%	20.6%	5.9%	19.7%	11.6%	25.3%	9.0%	22.7%	8.1%	21.9%
IPHC AREA 3A												
Initial Allocation	14.00%		15.80%		15.40%		12.70%		12.80%		12.70%	
2006	-0.8%	-0.8%	-2.6%	-2.6%	-2.2%	-2.2%	0.5%	0.5%	0.4%	0.4%	0.6%	0.6%
2007	-1.8%	-1.6%	-3.7%	-3.5%	-3.3%	-3.1%	-0.5%	-0.3%	-0.6%	-0.4%	-0.5%	-0.3%
2008	-1.5%	-1.0%	-3.3%	-2.9%	-2.9%	-2.5%	-0.2%	0.3%	-0.2%	0.2%	-0.1%	0.3%
2009	-1.1%	-0.4%	-2.9%	-2.3%	-2.5%	-1.9%	0.2%	0.9%	0.2%	0.8%	0.3%	0.9%
2010	-0.7%	0.2%	-2.5%	-1.6%	-2.1%	-1.2%	0.6%	1.5%	0.5%	1.5%	0.7%	1.6%
2011	-0.3%	0.9%	-2.1%	-0.9%	-1.7%	-0.5%	1.0%	2.2%	0.9%	2.1%	1.1%	2.2%
2012	0.1%	1.6%	-1.7%	-0.2%	-1.3%	0.2%	1.4%	2.9%	1.4%	2.8%	1.5%	2.9%
2013	0.6%	2.3%	-1.3%	0.5%	-0.9%	0.9%	1.9%	3.6%	1.8%	3.6%	1.9%	3.7%
2014	1.0%	3.1%	-0.8%	1.3%	-0.4%	1.7%	2.3%	4.4%	2.2%	4.3%	2.3%	4.5%
2015	1.5%	3.9%	-0.4%	2.1%	0.0%	2.5%	2.7%	5.2%	2.7%	5.2%	2.8%	5.3%

Source: NEI charter harvest projections. Projections of charter allocations.

Based on the information reported in Table 73 the charter sector will be constrained by any of the allocation at the time they are implemented or within the next three years. In Area 3A the allocations could be binding as soon as 2008, or they may not constrain the charter sector through 2015. If additional 3A management measures are imposed on charter sector in Area 3A, the length of time for the sector to reach the allocation limit could be increased. Conversely, if the 2C CEY declines in future years relative to 2006, the charter sector will be constrained by the allocation limit even sooner than projected in the table.

Table 74 shows information similar to that provided in Table 73 except the amounts are shown in millions of pounds. By converting the results to millions of pounds, it is relatively straight forward to show the number of pounds the commercial sector would forgo by continuing the status quo versus implementing one of the Option 1 alternative. Assuming that for every pound the charter sector exceeds their allocation the commercial sector loses a pound of IFQ, we can show the reduction in commercial IFQ by year through 2015. For example, if the Council selected Option 1(b) for Area 2C, the commercial sector would not benefit from implementing the charter allocation until 2010. That year the charter allocation would prevent 30,000 pounds of IFQ from being reallocated to the charter sector. By 2015, the commercial sector would retain an additional 680,000 pounds of IFQ as a result of the charter harvest limit.

Table 74 Projections of when and by how much (in pounds) the Option 1 allocations will be exceeded

	Mlb Over Alt. "a"		Mlb Over Alt. "b"		Mlb Over Alt. "c"		Mlb Over Alt. "d"		Mlb Over Alt. "e"		Mlb Over Alt. "f"	
Year	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
IPHC AREA 2C												
Initial Allocation	13.10%		16.40%		17.30%		11.70%		14.30%		15.10%	
2006	0.73	0.73	0.40	0.40	0.31	0.31	0.87	0.87	0.61	0.61	0.53	0.53
2007	0.32	0.54	(0.01)	0.21	(0.10)	0.12	0.46	0.68	0.20	0.43	0.12	0.34
2008	0.16	0.40	(0.18)	0.06	(0.26)	(0.02)	0.29	0.54	0.04	0.28	(0.05)	0.19
2009	0.25	0.59	(0.08)	0.26	(0.17)	0.17	0.39	0.73	0.14	0.48	0.05	0.39
2010	0.36	0.82	0.03	0.48	(0.06)	0.40	0.50	0.96	0.24	0.70	0.16	0.61
2011	0.47	1.06	0.14	0.73	0.05	0.64	0.61	1.20	0.36	0.94	0.27	0.86
2012	0.59	1.34	0.26	1.01	0.17	0.92	0.73	1.48	0.48	1.22	0.39	1.14
2013	0.72	1.65	0.39	1.31	0.30	1.23	0.86	1.79	0.61	1.53	0.52	1.44
2014	0.86	1.99	0.53	1.66	0.44	1.57	1.00	2.13	0.74	1.87	0.66	1.79
2015	1.01	2.38	0.68	2.04	0.59	1.96	1.15	2.52	0.89	2.26	0.81	2.17
IPHC AREA 3A												
Initial Allocation	14.00%		15.80%		15.40%		12.70%		12.80%		12.70%	
2006	(0.23)	(0.23)	(0.78)	(0.78)	(0.66)	(0.66)	0.15	0.15	0.13	0.13	0.17	0.17
2007	(0.54)	(0.48)	(1.09)	(1.03)	(0.98)	(0.91)	(0.16)	(0.10)	(0.18)	(0.12)	(0.14)	(0.08)
2008	(0.43)	(0.31)	(0.98)	(0.86)	(0.87)	(0.74)	(0.05)	0.08	(0.07)	0.06	(0.03)	0.09
2009	(0.32)	(0.13)	(0.87)	(0.67)	(0.75)	(0.56)	0.07	0.26	0.04	0.24	0.08	0.28
2010	(0.20)	0.07	(0.75)	(0.48)	(0.64)	(0.36)	0.18	0.45	0.16	0.43	0.20	0.47
2011	(0.08)	0.27	(0.63)	(0.28)	(0.52)	(0.16)	0.30	0.65	0.28	0.63	0.32	0.67
2012	0.04	0.48	(0.51)	(0.07)	(0.39)	0.05	0.43	0.86	0.41	0.84	0.44	0.88
2013	0.17	0.70	(0.38)	0.15	(0.26)	0.27	0.55	1.09	0.53	1.06	0.57	1.10
2014	0.30	0.93	(0.25)	0.38	(0.13)	0.50	0.68	1.32	0.66	1.30	0.70	1.33
2015	0.43	1.17	(0.12)	0.62	0.00	0.74	0.82	1.56	0.80	1.54	0.84	1.57

Source: NEI charter harvest projections. Projections of charter allocations.

Option 2: The Council is considering three alternatives under Option 2. All of the alternatives would allocate the charter sector a fixed number of pounds of halibut. Because the allocation is fixed, changes in the Fishery CEY do not impact the charter sector. All of the increase or decrease in the Fishery CEY is reflected in the commercial allocation. Because we have assumed that the Fishery CEY is 9.94 Mlb in Area 2C and 29.85 Mlb in Area 3A, any increase (decrease) from that amount would flow to (from) the commercial sector. The fixed allocation to the charter provide more certainty regarding how long their fishery will last before they reach the cap. That allows them to market their trips for the following year with better information to provide potential clients on when they should take a trip to be certain they will be able to retain halibut.

Option 2(a) through Option 2(c) allocate 1.43 Mlb, 1.69 Mlb, or 1.90 Mlb of halibut to the Area 2C charter sector, respectively. The 1.43 Mlb allocated under Option (2)a would not cover the charter sector's projected needs. They are projected to be over their allocation when the program would be implemented. Option 2(b) allocates the charter sector enough halibut, if they have lower growth in their harvest, to be under the allocation until 2011. They would be required to stop retaining halibut before the traditional end of the charter season every year if they have the higher harvest growth rate. Option 2(c) is projected to provide enough halibut to keep the Area 2C charter sector under their allocation until 2010 or 2013, depending on the harvest growth rate.

In Area 3A, the charter sector would be allocated 3.65 Mlb, 4.01 Mlb, or 4.15 Mlb, depending on the allocation alternative. The allocation of 3.65 Mlb is not expected to provide sufficient halibut to allow the charter sector to have a complete fishing year after it is implemented. The other options would result in a harvest closure between 2009 and 2012 depending on the harvest growth rate. In general the allocations being considered are less of a constraint in Area 3A than in Area 2C. Given, the potential for future reductions in the Area 2C CEY through use of a coastwide model instead of the closed-area model, the negative impacts on the Area 2C charter sector could be greatest. The following is excerpted from Clark and Hare (2006):

"Growing concerns about net migration from the western to the eastern Gulf of Alaska have led the staff to doubt the accuracy of the closed-area assessments that have been done for many years. A coastwide assessment with survey apportionment was presented to the IPHC, in addition to the closed-area assessments, and was used to calculate the available yield in each area. The two assessments produced very similar estimates of total abundance (total exploitable biomass about 400 M lb, total available yield about 80 M lb) but the distribution among areas was quite different, with the coastwide assessment showing more biomass and available yield in Areas 3B and 4 than the closed-area assessments and less in Area 2. Area 3A is about the same in both assessments."

Table 75 Pounds of halibut allocated to the charter sector under Option 2 and amount they are over that allocation by year, 2006-2015

	Mlb over alt. "a"		Mlb over alt. "b"		Mlb over alt. "c"	
Year	**Low**	**High**	**Low**	**High**	**Low**	**High**
IPHC Area 2C						
Initial Allocation	**1.43 Mlb**		**1.69 Mlb**		**1.90 Mlb**	
2006	0.60	0.60	0.34	0.34	0.14	0.14
2007	0.19	0.41	(0.07)	0.15	(0.28)	(0.05)
2008	0.02	0.27	(0.24)	0.01	(0.44)	(0.20)
2009	0.12	0.46	(0.14)	0.20	(0.34)	(0.00)
2010	0.23	0.69	(0.03)	0.43	(0.24)	0.22
2011	0.34	0.93	0.08	0.67	(0.12)	0.47
2012	0.46	1.21	0.20	0.95	(0.00)	0.74
2013	0.59	1.52	0.33	1.26	0.13	1.05
2014	0.73	1.86	0.47	1.60	0.27	1.40
2015	0.88	2.25	0.62	1.99	0.41	1.78
IPHC Area 3A						
Initial Allocation	**3.65 Mlb**		**4.01 Mlb**		**4.15 Mlb**	
2006	0.30	0.30	(0.06)	(0.06)	(0.20)	(0.20)
2007	(0.01)	0.05	(0.38)	(0.31)	(0.51)	(0.45)
2008	0.10	0.22	(0.27)	(0.14)	(0.40)	(0.28)
2009	0.21	0.41	(0.15)	0.04	(0.29)	(0.09)
2010	0.33	0.60	(0.03)	0.24	(0.17)	0.10
2011	0.45	0.80	0.09	0.44	(0.05)	0.30
2012	0.57	1.01	0.21	0.65	0.07	0.51
2013	0.70	1.23	0.34	0.87	0.20	0.73
2014	0.83	1.46	0.47	1.10	0.33	0.96
2015	0.97	1.70	0.60	1.34	0.47	1.20

Source: NEI projections of future charter harvest and the Council allocation alternatives estimated using ADF&G harvest data.

Using the projections of the difference between the charter allocation and their projected status quo harvest, estimates of when the charter sector would be prohibited from retaining halibut were generated. The analysts assumed that the charter sector would continue to harvest the same percentage of their total catch by week in the future as they did in 2006. Comparing the cumulative weekly harvest percentage from 2006 to the percentage of the projected harvest the sector is allocated, the week the charter fishery is projected to be prohibited from retaining halibut is estimated.

The week that a prohibition on retention of halibut by charter clients is projected to occur in Area 2C is shown in Table 76. The information shown in that table, under a low charter harvest growth rate,

indicates that the more restrictive alternatives could limit retention of halibut by end of July in 2007. When the projection is extended to 2015 the prohibition on retaining halibut could start as soon as the week of July 10th. Under the higher growth rate in halibut harvests the retention closure date is shifted up to as early as mid-July. All of the alternatives result in retention being limited at some point in the year, except Option 2(c). Under the higher harvest growth rates, retention might be limited as soon as the last week of June. These early closures would limit charter trips for visitors to Alaska that come later in the year. The potential for a closure to limit client's ability to harvest halibut is expected to result in clients booking trips earlier and earlier in the year. The discounted trips that were offered late in the year would likely be eliminated, and depending on how much demand shifted to earlier in the year, the early season discounted trips may also not be offered.

Closing the fishery to harvest as early as June could result in some members of the charter sector filling the closure time with other activities. Those activities could include salmon fishing trips, catch and release halibut fishing, sightseeing, or targeting other saltwater fisheries. The amount of effort that moves to other activities will depend on the individual operator's willingness to diversify their business and their ability to attract clients.

Table 76 Projected week the Area 2C charter fishery will be prohibited from retaining halibut

	% of charter allocation				Week Fishery Projected to Close			
Option 1	**Low**		**High**		**Low**		**High**	
	2007	**2015**	**2007**	**2015**	**2007**	**2015**	**2007**	**2015**
a	80%	56%	70%	35%	31-Jul	10-Jul	24-Jul	26-Jun
b	101%	71%	89%	44%	n/a	24-Jul	14-Aug	3-Jul
c	106%	74%	93%	47%	n/a	31-Jul	21-Aug	3-Jul
d	72%	50%	63%	32%	31-Jul	10-Jul	17-Jul	26-Jun
e	88%	61%	77%	39%	14-Aug	17-Jul	31-Jul	3-Jul
f	93%	65%	82%	41%	21-Aug	24-Jul	7-Aug	3-Jul
Option 2								
a	88%	62%	78%	39%	14-Aug	17-Jul	31-Jul	3-Jul
b	104%	73%	92%	46%	n/a	31-Jul	14-Aug	3-Jul
c	117%	82%	103%	52%	n/a	7-Aug	n/a	10-Jul

Source: ADF&G 2006 weekly charter harvest data and estimates of the amount the charter sector is over (under) their allocation.

In Area 3A, the charter sector is projected to exceed their allocation on 2007 only Option 2(a). The retention of halibut is projected to be allowed until the first week of September. If the high harvest growth rate is realized, the closure could be as early as mid-July or as late as early August.

Table 77 Estimates of when the 3A charter fishery may close under the proposed allocation alternatives

	% of charter allocation over the cap				Week Fishery Projected to Close			
	Low		**High**		**Low**		**High**	
Option 1	**2007**	**2015**	**2007**	**2015**	**2007**	**2015**	**2007**	**2015**
a	115%	91%	113%	78%	n/a	14-Aug	n/a	24-Jul
b	130%	103%	128%	88%	n/a	n/a	n/a	7-Aug
c	127%	100%	125%	86%	n/a	n/a	n/a	7-Aug
d	104%	82%	103%	71%	n/a	31-Jul	n/a	17-Jul
e	105%	83%	103%	71%	n/a	31-Jul	n/a	17-Jul
f	104%	82%	102%	71%	n/a	31-Jul	n/a	17-Jul
Option 2								
a	100%	79%	99%	68%	n/a	24-Jul	4-Sep	17-Jul
b	110%	87%	108%	75%	n/a	7-Aug	n/a	24-Jul
c	114%	90%	112%	78%	n/a	14-Aug	n/a	24-Jul

Source: ADF&G 2006 weekly charter harvest data and estimates of the amount the charter sector is over (under) their allocation.

If we assume that the charter trip prices are not affected by the imposition of the harvest limit and the pounds of halibut per trip is constant at 2004 levels, estimates of reductions in charter revenue can be made. Table 78 shows the gross revenue reduction the charter sector is expected to realize. Because the proposed allocations are most restrictive for the Area 2C businesses and the Area 2C trip historically command a higher price, the gross revenue reductions greatest in Area 2C. Gross revenue reductions are projected to range from $8.8 million to $117.2 million over the years 2009 through 2015. In area 3A the reduction in gross revenue could range from $0 to $51 million depending on the option selected.

It is important to note that the analysis of gross revenue does not provide any insights into the net benefits that charter operators derive from that income. We assume that because the charter operators compete with a large number of similar business for clients they generate no producer surplus, or it is very limited.

Table 78 Estimates of total charter income reductions (Million $) compared to the status quo during the years 2009-2015 as a result of imposing harvest limits

	Area 2C				Area 3A			
	Option 1		Option 2		Option 1		Option 2	
Alternative	Low	High	Low	High	Low	High	Low	High
a	$46.45	$106.68	$36.49	$96.72	$ 6.71	$25.84	$28.97	$51.57
b	$21.95	$ 81.32	$18.56	$76.98	$ -	$ 8.23	$12.16	$33.42
c	$17.00	$ 74.79	$ 8.77	$61.42	$ 0.02	$11.12	$ 7.62	$27.20
d	$56.98	$117.22			$21.72	$44.88		
e	$37.42	$ 97.65			$20.68	$43.69		
f	$30.97	$ 91.20			$22.47	$45.74		

Assumptions: The average client would harvest 25.81 lbs of halibut per trip in Area 2C (from 2004 ADF&G data, 1.75 Mlb of harvest divided by 67,803 clients) and 31.46 lbs of halibut in Area 3A (from 2004 ADF&G data, 3.67 Mlb of harvest divided by 116,670 clients). The average charter trip cost $280 in Area 2C and $225 in Area 3A. The NEI estimates of future charter harvests hold for 2006-2015. The Fishery CEY is constant at 2006 levels.

Projected Area 2C charter sector harvests indicate that without additional regulations the charter sector would annually increase their catch by about 6.8% under the low growth option. Under the high growth option they are projected to increase their harvest by about 11.7% per year. Assuming those charter harvest growth estimates, a stable fishery CEY, and the 2006 commercial ex-vessel price of $3.72 per pound, the change in ex-vessel revenue is estimated for the commercial sector. The projected change in ex-vessel revenue assumes that the quantity of Alaskan halibut harvested does not impact the ex-vessel price. Herrmann and Criddle (2006) report that changes in the quantity of commercial Alaskan halibut landings has a relatively small impact on ex-vessel prices. They report that a 1% increase (decrease) in the quantity of Alaskan halibut landed will decrease (increase) the ex-vessel price by 0.09%, all else being equal. Given the magnitude of change in total halibut landings and the price-flexibility of halibut, for simplicity, the small expected increases in ex-vessel price were assumed away.

The changes in gross revenue generated by the commercial sector as a result of limiting charter harvests are reported in Table 79. It shows the Area 2C commercial sector would increase their ex-vessel revenue by $3.0 million to $40.2 million depending on the reduction in charter catch over the years 2009-2015. In Area 2A, the projected increase in ex-vessel revenue ranges from $0 to $26.7 million. As with the charter sector these estimates do not reflect the increase in benefits the sector derives from the allocation. However, even though the revenues are smaller, the producer surplus in the commercial sector could be larger than the charter sector's, because the commercial sector can take advantage of reduced harvest costs by having an individual allocation.

Table 79 Increase in ex-vessel revenue for the years 2009–2015 when the charter allocation options are implemented, compared to the status quo.

	Area 2C				Area 3A			
	Option 1		Option 2		Option 1		Option 2	
	Low	High	Low	High	Low	High	Low	High
a	$15.93	$36.58	$12.51	$33.17	$ 3.47	$13.37	$14.99	$26.68
b	$ 7.53	$27.89	$ 6.36	$26.40	$ -	$ 4.26	$ 6.29	$17.29
c	$ 5.83	$25.65	$ 3.01	$21.06	$ 0.01	$ 5.75	$ 3.94	$14.07
d	$19.54	$40.19			$11.24	$23.22		
e	$12.83	$33.48			$10.70	$22.60		
f	$10.62	$31.27			$11.62	$23.66		

Assumptions: Poundage decreases (increases) are the same magnitude as the charter increases (decreases). They changes were calculated as the difference between the projected charter harvest and the 2006 charter harvest. Ex-vessel revenue changers were calculated by multiplying the change in catch by the reported 2006 ex-vessel price ($3.70 per pound).
Source: NEI charter harvest estimates.

Finally, it is important to note that it is not appropriate to compare projected changes in charter revenues with projected changes to commercial ex-vessel revenue to determine which allocation is superior. Some of the reasons the compairison is not appropriate are:

- Both estimates only consider the gross revenue generated by the sectors. Net revenues are a more appropriate comparision for the two sectors, but cost data are not available to generate those estiamtes. Because of the composition and structure of the charter sector, it is assumed that they are unable to generate producer surplus in the long-term. Commerial harvesters operating under an IFQ program, that did not have to buy all of their QS, will likely be able to generate some producer surplus.
- Gross revenue estimates for the charter and commercial sectors do not consider the well-being of charter clients or halibut consumers. Criddle et al (2003) found that charter clients and halibut consumers generated a larger consumer surplus than producer surplus generated by the charter operators and commercial harvesters. Therefore, the surplus from the charter clients and halibut consumers will likely determine which sector generates the greatest benefit to society. Those estimates for the two sectors cannot be provided.
- Policy makers may have social or political reasons to implement an option that does not generate the greatest economic benefits. There are often valid reasons to consider the impact ta decision will have on other parts of society. For example, Central Park in New York City could be used for homes or businesses and the city could generate more revenue, but the citizens value the park for its recreational activites and the natural scenery it provides in the large urban landscape. Therefore, the area remains a park. If for social reasons policy makers determine that one sector should have more or less halibut, they have the latitude to make that allocation under the MSA.

Suboptions: Two suboptions are being considered that alter the number of pounds of halibut allocated to the charter sector under Option 2 if the CEY changes from the base period by a predefined percentage. The effect if the suboptions is to cause Option 2 to behave much like Option 1. Instead of a fixed percentage allocation, the charter allocation moves in "steps" with changes in the CEY. The overall result is that the charter allocation amounts (and the overall impacts) are much closer to those under Option 1 than under Option 2.

It is important to note that the CEYs used in this section are the historic CEYs calculated and used those years. The IPHC is considering using a coastwide assessment instead of a closed-area assessment. The

effects of migration on the closed-area model, used historically, tends to overestimate the halibut in IPHC area 2C and under-estimate the halibut in IPHC area 3A (Clark and Hare, 2006). Changing the assessment method to a coast-wide model could result in the 2C step-down being triggered sooner. **Because the method of calculating the CEY could result in allocation changes under these suboptions, it is important the Council state their intent regarding which CEYs should be used to calculate the historic average for the three time periods being considered if the program is implemented**. If the historic CEYs are used, the information in the following tables show the future CEYs that would trigger a change in the allocation. Alternatively, the Council could request that CEYs be recalculated using the coastwide method, if the IPHC implements that approach to calculate the CEY. If the historic CEYs are updated, the tables will need to be revised to reflect the new historic average CEY.

Once the base period is defined, future CEYs can be compared to the base CEY to determine whether the CEY has changed the required amount. If the baseline average CEY has changed the specified amount, the charter sector's allocation would be increased or decreased by the percentages listed in suboptions i or ii.

Table 80 reports that the average baseline CEYs are 11.80 Mlb under Option 2(a), 11.72 Mlb under Option 2(b), and 12.40 Mlb under Option 2 (c). Using those baseline CEYs the future CEYs that would trigger changes in the charter sector's allocation are reported in the left half of table. Note that any future CEY that is between 85% and 115% of the baseline CEY would not result in a change in the charter allocation. CEY changes that are more than 15% of the baseline CEY would result in a change in the allocation.

Table 80 Hypothetical changes in IPHC area 2C CEYs and the impact the changes would have on the charter sector's annual allocation

	1995-1999	2000-2004	2001-2005	1995-1999	2000-2004	2001-2005
	Avgerage CEY (Mlb)			Initial Allocation (Mlb)		
	11.80	11.72	12.40	1.43	1.69	1.90
Percentage of Average CEY	Future CEY levels that would trigger a change in charter allocation (Mlb)			New Allocation Resulting from Change in CEY (Mlb)		
0% - 15%	1.77	1.76	1.86	0.21	0.25	0.28
15.01% - 25%	2.95	2.93	3.10	0.36	0.42	0.47
25.01% - 35%	4.13	4.10	4.34	0.50	0.59	0.66
35.01% - 45%	5.31	5.27	5.58	0.64	0.76	0.85
45.01% - 55%	6.49	6.44	6.82	0.79	0.93	1.04
55.01% - 65%	7.67	7.62	8.06	0.93	1.10	1.23
65.01% - 75%	8.85	8.79	9.30	1.07	1.27	1.42
75.01% - 85%	10.03	9.96	10.54	1.22	1.44	1.61
85.01% -114.99%				1.43	1.69	1.90
115% - 124.99%	13.57	13.47	14.26	1.65	1.95	2.18
125% - 134.99%	14.75	14.65	15.50	1.79	2.12	2.37
135% - 144.99%	15.93	15.82	16.73	1.93	2.28	2.56
145% - 154.99%	17.11	16.99	17.97	2.08	2.45	2.75
155% - 164.99%	18.29	18.16	19.21	2.22	2.62	2.94
165% - 174.99%	19.47	19.33	20.45	2.36	2.79	3.13
175% - 184.99%	20.65	20.50	21.69	2.51	2.96	3.32
185% - 194.99%	21.83	21.67	22.93	2.65	3.13	3.51
195% - 204.99%	23.01	22.85	24.17	2.79	3.30	3.70

Source: IPHC annual CEY data.

The average baseline CEYs for IPHC area 3A were calculated to be 30.70 Mlb under Option 2(a), 30.34 Mlb under Option 2(b), and 32.00 Mlb under Option 2(c). Those CEY amounts are used as the baseline

to determine if the future Area CEY has changed a sufficient amount to trigger an adjustment in the charter sector's allocation. Table 37 reports the CEY levels that would result in a change in the charter sector's allocation and the allocation in millions of pounds.

It should be noted that the allocation would continue to increase at 10% intervals if the CEY exceeded 205% of the average baseline CEY. Because the charter sector allocation increases about 0.37 Mlb, 0.40 Mlb, and 0.41 Mlb, under Options 2(a) through Options 2(c), respectively, for each 10% increase above the average baseline, larger CEY increases than are shown in Table 37 can be estimated relatively easily.

Table 81 Hypothetical changes in IPHC area 3A CEYs and the impact the changes would have on the charter sector's annual allocation

	1995-1999	2000-2004	2001-2005	1995-1999	2000-2004	2001-2005
	Average CEY (Mlb)			Initial Allocation (Mlb)		
	30.70	30.34	32.00	3.65	4.01	4.15
Percentage of Average CEY	Future CEY levels that would trigger a change in charter allocation (Mlb)			New Allocation Resulting from Change in CEY (Mlb)		
0% - 15%	4.61	4.55	4.80	0.55	0.60	0.62
15.01% - 25%	7.68	7.59	8.00	0.91	1.00	1.04
25.01% - 35%	10.75	10.62	11.20	1.28	1.40	1.45
35.01% - 45%	13.82	13.65	14.40	1.64	1.80	1.87
45.01% - 55%	16.89	16.69	17.60	2.01	2.21	2.28
55.01% - 65%	19.96	19.72	20.80	2.37	2.61	2.70
65.01% - 75%	23.03	22.76	24.00	2.74	3.01	3.11
75.01% - 85%	26.10	25.79	27.20	3.10	3.41	3.53
85.01% -114.99%				3.65	4.01	4.15
115% - 124.99%	35.31	34.89	36.80	4.19	4.61	4.77
125% - 134.99%	38.38	37.93	40.00	4.56	5.01	5.18
135% - 144.99%	41.45	40.96	43.20	4.92	5.41	5.60
145% - 154.99%	44.52	44.00	46.40	5.29	5.81	6.01
155% - 164.99%	47.59	47.03	49.60	5.65	6.22	6.43
165% - 174.99%	50.66	50.06	52.80	6.02	6.62	6.84
175% - 184.99%	53.73	53.10	56.00	6.38	7.02	7.26
185% - 194.99%	56.80	56.13	59.20	6.75	7.42	7.67
195% - 204.99%	59.87	59.17	62.40	7.11	7.82	8.09

Source: IPHC annual CEY data.

When the average CEY is compared to the 2007 CEY for IPHC area 2C, the 2007 CEY is between 87% and 92% of the average CEY for each alternative. That level of change from the initial CEY would not reduce the initial 2C allocation. In Area 3A, the 2007 CEY is larger than the historic average CEYs being considered. Because the CEY increase is less than 115% of the historic average under Option 2(c), the charter sector would receive 100% of their initial allocation. Under Option 2(a) and Option 2(b) the 2007 CEY is between 115% and 125% of the historic average CEY so the charter sector would be allocated 115% of their initial allocation.

Economic Impacts of the Allocation Alternatives:

Status Quo: Under the Status Quo the charter sector is expected to increase the total number of trips taken by clients and the total pound of halibut harvested. The Status Quo is defined as the management measures currently in regulation and the measures that have been approved by the Council but not yet implemented. Management currently included in the Status Quo include the moratorium on new entry into the charter sector, a two fish bag limit, and four fish possession limit. The Council and NMFS have also taken action to reduce the current charter harvests in IPHC Area 2C. According to the Council's

June 2007 Newsletter, during 2007 the Council and NMFS have implemented or proposed the following amendment for halibut fishery in IPHC Area 2C:

- NMFS has implemented a regulation that one of two fish in the daily bag limit must be less than or equal to 32 inches (effective June 1, 2007)
- The Council recommended that the halibut charter regulations be revised for 2008 to include:
  1. No charter halibut harvest by skipper and crew (currently a State regulation);
  2. line limits of six per vessel, not to exceed the number of paying clients on board (currently a State regulation);
  3. An annual limit of four fish per angler.

At the Council's October 2007 meeting they are expected to review proposed measures to control charter harvests of halibut in IPHC area 3A. Options being considered include:

- One trip per day;
- No harvest by skipper and crew and line limits;
- Annual limit of four, five, or six fish per angler;
- Reduced bag limits of one fish per day for May, June, July, August, or the entire season;
- Two fish daily bag limit, with one fish any size and one fish larger than 45" or 50";
- Two fish daily bag limit, with one fish any size and one fish less than 32", 34", or 36";
- Two fish daily bag limit, with one fish any size and one fish less than 32" or larger than 45" or 50".

Even with the management measures currently in regulation or approved by the Council, the charter sector is expected to realize an increase in client demand for sport fishing trips, which is expected to increase the total pounds of charter halibut harvested. While the moratorium will limit new entry into the charter sector, a sufficient number of permits are expected to be issued to cause charter operators to compete for the available clients. Charter operators are expected to have the ability to increase effort under the moratorium by taking more trips with their qualified vessels or carrying more clients per trip, on average. Based on these expectations, and the assumption that the fishery CEY will be fairly stable, the following conclusions are drawn[63].

- Charter operators are assumed to behave as perfect competitors (the proposed moratorium will limit new entry but the persons holding the permits will compete for clients because they will have excess capacity on their vessels over the time period considered in this analysis), so the increase in demand will result in increased angler surplus.
- Charter prices could increase in the short-run, but competition for clients will bid the price of trips down in the long-run to where operators are making normal profits. Therefore, the charter operators are not expected earn any producer surplus in the long-run.
- The reduction in the commercial harvest will result in small increases in the ex-vessel price of commercial halibut. The increase in ex-vessel price is not expected to offset the reduction in income that is associated with harvesting fewer halibut.
- Because the value of QS is determined by the net present value of future harvests, the price of Area 2C and Area 3A commercial QS is expected to decline. The price decrease would be due to the fact that the decrease revenue resulting from harvesting fewer halibut is not offset by ex-vessel price increases.

[63] Many of the conclusions are based on work by Criddle et al (2003), Criddle (2004 and 2006), and Hermann and Criddle, 2006).

- Producer surplus generated by the commercial sector is expected to decline as a result of the decrease in quantity harvested. IFQ holders are expected to generate some producer surplus because they were issued the privilege to harvest an annually defined number of pounds of halibut. The cost savings associated with when, where, and how to fish should allow them to earn above normal profits. Persons that had to buy their QS are expected to have higher costs (the price of the QS), may not earn above normal profits.
- Reducing the total amount of halibut available to the commercial sector is expected cause additional consolidation of QS holdings. Marginal commercial QS holders are expected to sell their holdings to lower cost producers because the increased charter harvest reduces the pounds of IFQ (and net revenue) derived from their QS.
- Consumer surplus of halibut consumers will decrease because less halibut is available on the market. Because consumer surplus is expected to be a substantial portion of the total surplus, the reduction in consumer surplus may result in the net National benefits declining.
- Communities will be impacted when the distribution of catch between to the two sectors changes. Communities that are more dependent on charter businesses will benefit from increased charter harvests, communities that are more dependent on commercial harvests will be harmed. However, most communities are dependent on both sectors so the increases in activity by one sector will, to some extent, offset the reductions by the other sector.

Limiting Charter Harvests: Option 1 and Option 2 that are proposed by the Council would limit the total amount of halibut that the charter sector may harvest. All of the alternatives are expected to constrain charter harvests by about 2015 or before. Because the charter allocations are expected to constrain charter harvests the impacts of the alternatives will be different than the Status Quo alternative. The expected impacts on the various sectors are discussed below. Again, many of these results were described in the paper prepared in 2006 by Criddle.

- Competition for clients will cause charter operators to compete by increasing the quality of the service they provide or by reducing the price per trip. Assuming that charter operators are all providing fairly uniform, high quality trips for clients, the charter operators will compete based on trip prices.
- In the short-run increased demand for trips could result in an increase in trip prices, but over the long run competition for clients and the race to book clients while halibut is available will cause charter operators to bid down the price to a level where charter operations are making normal profits and have do not generate any producer surplus.
- The moratorium may slow the rate profits are decreased, but the excess capacity in the fleet will prevent the charter operators from having sufficient power to halt the dispersal of net benefits.
- Once the charter is constrained by their allocation, the commercial sector will not be impacted after the constraint takes affect. Because many of the alternatives do allow for some increased harvest by the charter sector, the commercial sector will be impacts like under the status quo to that point.
- Option 1 alternatives set the charter allocation as a percentage of the Fishery CEY. Therefore increases in the Fishery CEY increases the total amount of halibut the charter sector and the commercial sector may harvest. Under Option 1, increases in the Fishery CEY will benefit charter operators if they are constrained by the cap. They would be allowed to take additional trips, which would increase net revenue for the fleet and increase angler surplus. The commercial sector would also benefit from additional halibut. They would be expected to increase net revenues, consumer surplus, and QS values. If they will not harvest their allocation at the lower CEY, the additional halibut generate no benefits. If there is not a mechanism to transfer the unused halibut to the commercial sector they would stay in the water and, depending on the amount, slightly increase the Fishery CEY the following year. A decrease in the CEY would have the opposite impacts. The charter sector would be more constrained by the decrease in halibut. They could offer fewer trips

and the season when halibut could be retained would end sooner. This would decrease both charter net revenue and angler surplus. Commercial net revenue, consumer surplus, and QS values would also decline if the decline in catch is thought to extend over a long period of time.

- Option 2 would allocate a fixed number of pounds to the charter sector. The charter sector would not be affected by changes in the Fishery CEY. The commercial sector would be impacted in the same ways as described under Option 1 except the magnitude of the impacts would be larger.
- It is not possible to determine with certainty whether the redistribution of the Fishery CEY will increase or decrease total net benefits.
- Imposing a limit on charter harvests will result in a race for clients to take trips earlier in the year while halibut is available. The increased demand for early season trips will cause the halibut charter allocation to be taken earlier and earlier in the year.
- Communities will be impacted as discussed under the Status Quo with one exception. Communities that are positioned to take advantage of the shift to earlier trip dates will benefit over those that are less able to attract clients earlier in the year. Historic harvest data by port in 2006 indicated that this will disadvantage the smaller more rural communities that may not start offering trip until a month after the more accessible communities begin providing trips to clients.

Action 2 Alternative 2

Action 2 Alternative 2 contains two options that allow compensated reallocation shifts between the halibut commercial and charter sectors to occur. Table 11 summarizes the results of the analysis for each of the four suboptions. The analysis shows that every analyzed common pool management system requires legislative changes by exogenous Federal and/or state bodies. The individual management option does not definitively require a legislative action by an exogenous body, but would require a regulatory amendment to the Halibut IFQ program. It would also likely require the allocation amongst charter operators of the initial allocation to the charter sector. In addition, the analysis encountered a series of overarching issues that are likely to affect the implementation of both a common pool management system and an individual management system. Table 82 and Table 83 summarize the results of the analysis and the overarching issues.

Table 82 Summary Comments on Elements and Options

Element	Option	Common Pool Options			Individual Management Option
		Federal Common Pool	State Common Pool	Regional Non-Profit Association Common Pool	
Element 1.1	Holding QS	May/may not require a regulatory change	Change in QS holding regulations required.	Change in QS holding regulations required State of Alaska legislation required	Change in QS holding regulations required if operator does not meet current requirements
	Loan Programs	Federal legislative action required to access existing programs.	SOA legislative changes required to access existing programs.	Private loans likely the best option. Legislative changes required to access other non-private loan programs.	Private loans likely the best option. Legislative changes required to access Federal and SOA loan programs.
	Buyout Program	Federal legislative action required	N/A	N/A	N/A
	Bonding	N/A	SOA legislative changes required	N/A	N/A
Element 1.2	Charter Stamp	Federal legislative action required to create a charter stamp.	Dedicated halibut charter stamp not possible without state management authority. State saltwater charter stamp would require legislative changes and would not guarantee program funding.	N/A	The revenue stream for the individual management is likely to come from the individual operator's business revenues. The surcharges necessary to cover loan repayments will likely be equal to the per client fees calculated for the common pool options.
	Sportfishing License Surcharge	N/A	SOA legislative changes required	N/A	
	Moratorium Permit Fee	A moratorium permit fee requires legislative change as current Federal law only allows NOAA to collect fees associated with individual fishing privileges	N/A	N/A	
	Self-Assessment Fee	A per unit fee would require a legislative change as current Federal law only allows NOAA to collect fees associated with individual fishing privileges	N/A	Right to self-tax would need to be part of the legislative package creating the RNPA.	
	Business License Fee	Not Analyzed	Per unit fee would require a legislative action.	Not Analyzed	
Element 2.1	Limits on Transferability	Transferability limits would create allocation "floors" for both sectors. If recent long-term trends in charter halibut harvest persist, the transferability limits create an effective cap on the size of the charter sector..			
Element 2.2	Limits on Purchase	Purchase limits will make implementation of the common pool program more difficult as the charter sector's need for QS units are a substantial portion of the average annual trading volume in the QS market. Restrictions based on blocked units and vessel classes may protect entry-level anglers to some degree, but will also exacerbate the potential market effects of the compensated reallocation. Price effects resulting from the compensated reallocation are likely to raise prices for all classes of QS regardless of restrictions.			
Element 2.3	Limits on Leasing	Leasing restrictions lower the incentive to purchase more QS than an individual or entity can reasonably use. However, allowing leasing could help alleviate the execution issues noted in the limits on purchase analysis. Leasing limits in this analysis conflict with proposed ownership limits.			

Table 83 Summary of Overarching Issues

Issue	Common Pool Management Regime	Individual Ownership Regime
Transition Issues	Effectively transitioning from the current system to a common pool system will be a challenge in part because the amount of QS required by the charter industry in the future is a significant portion of the annual QS trading volume. For example, the estimated amount of QS required to support the charter industry in Area 3A in 2010 is between 25 and 50% of the current average annual trading volume between 2001 and 2006. This raises the question of how to purchase this much quota share while minimizing market disruptions and ensuring that both sectors have the QS they need to meet demand.	The largest transition issue associated with the individual management regime is likely to be how the initial allocation to the sector is divided between qualifying charter participants. Failure to divide the initial allocation will result in a race for fish during the period when all operators fish the common pool.
Common Pool vs. Individual Ownership	There are a number of important differences between the common pool management regimes and the individual management regimes. First, in a common pool management regime there is a disconnect between the marginal cost of harvesting another fish (borne by the common pool) and the marginal benefit of harvesting another fish or taking another client (benefits the individual operator). Hence, there is no automatic connection between the purchaser of QS and the individual who derives benefits from the QS. Second, the creation of the common pool purchaser of QS will create a disproportionately large player in the QS market. This new common pool player will be many times larger than the other players in the market and may hold a certain amount of market power. Individual management regimes ensure that the maximum size for charter players and commercial players is roughly the same.	
In-Season Management	The analysis concludes that improved in-season management systems will be needed to effectively manage both the common pool and individual management options. The common pool manager will have a vested interest in ensuring accurate in-season tracking. Since the individual charter operators will not hold QS, it is impossible for them to harvest in excess of an IFQ. However, the common pool manager will be a QS holder and would potentially be subject to sanctions or penalties if the operators in aggregate exceed the TAC for the pool. Hence, the pool manager will be incentivized to know exactly how many GAF the individual operators have harvested if just to avoid violating the law. In-season management for an individual management regime will be necessary for any real time enforcement of QS violations by charter operators.	

3.0 REGULATORY FLEXIBILITY ACT

3.1 Introduction

The Regulatory Flexibility Act (RFA), first enacted in 1980, and codified at 5 U.S.C. 601, et. seq., was designed to place the burden on the government to review all regulations to ensure that, while accomplishing their intended purposes, they do not unduly inhibit the ability of small entities to compete. The RFA recognizes that the size of a business, unit of government, or nonprofit organization frequently has a bearing on its ability to comply with a Federal regulation. Major goals of the RFA are: (1) to increase agency awareness and understanding of the impact of their regulations on small business; (2) to require that agencies communicate and explain their findings to the public; and (3) to encourage agencies to use flexibility and to provide regulatory relief to small entities.

The RFA emphasizes predicting significant adverse impacts on small entities as a group distinct from other entities and on the consideration of alternatives that may minimize the impacts, while still achieving the stated objective of the action. When an agency publishes a proposed rule it must either, (1) "certify" that the action would not have a significant adverse effect on a substantial number of small entities, and support such a certification declaration with a "factual basis," demonstrating this outcome, or (2) if such a certification cannot be supported by a factual basis, prepare and make available for public review an Initial Regulatory Flexibility Analysis (IRFA) that describes the impact of the proposed rule on small entities.

Based upon a preliminary evaluation of the analyzed options, it appears that "certification" would not be appropriate. Therefore, an IRFA has been prepared for each action. Analytical requirements for the IRFA are described below in more detail.

The IRFA must contain:

- A description of the reasons why action by the agency is being considered;
- A succinct statement of the objectives of, and the legal basis for, the proposed rule;
- A description of, and where feasible, an estimate of the number of small entities to which the proposed rule will apply (including a profile of the industry divided into industry segments, if appropriate);
- A description of the projected reporting, record keeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record;
- An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap, or conflict with the proposed rule;
- A description of any significant alternatives to the proposed rule that accomplish the stated objectives of the Magnuson-Stevens Act and any other applicable statutes, and that would minimize any significant adverse economic impact of the proposed rule on small entities. Consistent with the stated objectives of applicable statutes, the analysis shall discuss significant alternatives, such as:
    a. The establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities;
    b. The clarification, consolidation or simplification of compliance and reporting requirements under the rule for such small entities;
    c. The use of performance rather than design standards;
    d. An exemption from coverage of the rule, or any part thereof, for such small entities.

The "universe" of the entities to be considered in an IRFA generally includes only those small entities that can reasonably be expected to be directly regulated by the proposed action. If the effects of the rule fall primarily on a distinct segment of the industry, or portion thereof, (e.g., user group, gear type, geographic area), that segment would be considered the universe for purposes of this analysis. In preparing an IRFA, an agency may provide either a quantifiable or numerical description of the effects of a proposed rule (and alternatives to the proposed rule), or more general, descriptive statements if quantification is not practicable or reliable.

Definition of Small Entities

The RFA recognizes and defines three kinds of small entities: 1) small businesses; 2) small non-profit organizations; and 3) and small government jurisdictions. Only small businesses are directly regulated by any of the four proposed actions.

Section 601(3) of the RFA defines a "small business" as having the same meaning as a "small business concern," which is defined under Section 3 of the Small Business Act. A "small business" or "small business concern" includes any firm that is independently owned and operated and does not dominate in its field of operation. The U.S. Small Business Administration (SBA) has established size criteria for all major industry sectors in the U.S., including fish harvesting and fish processing businesses. A business "involved in fish harvesting" is a small business if it is independently owned and operated and not dominant in its field of operation (including its affiliates), and if it has combined annual receipts not in excess of $4.0 million for all its affiliated operations worldwide. A seafood processor is a small business if it is independently owned and operated, not dominant in its field of operation (including its affiliates) and employs 500 or fewer persons, on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide. A business involved in both the harvesting and processing of seafood products is a small business if it meets the $4.0 million criterion for fish harvesting operations. A wholesale business servicing the fishing industry is a small business if it employs 100 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide. A business involved in providing fishing charter services is a small business if it is independently owned and operated, and not dominant in its field of operation, and if it has combined annual receipts, from all its economic activities, including affiliates, worldwide, not in excess of $6.5 million.

This IRFA describes the potential adverse economic impacts on small entities, attributable to the proposed alternatives allowing vessels, upon which IFQ derived from catcher/processor QS are being fished, to process non-IFQ species harvested along with their targeted species.

3.2 Reasons for Considering the Proposed Action

As described more fully in Section 3.4 of the RIR, in 2000 the Council proposed to establish GHLs for the charter halibut fishery in IPHC Area 2C and Area 3A. At its December 2006 meeting, the Council reviewed preliminary 2006 halibut charter harvest estimates from the ADF&G Sport Fish Division. The data indicated that the GHLs had been exceeded by 42% in Area 2C and 8% in Area 3A. In response to the new information, the Council initiated an analysis that includes a proposed action to reduce halibut charter harvests both Areas. At the June 2007 meeting, the Council voted on preferred alternatives for reducing Area 2C charter harvests. At the October 2007 meeting, the Council will conduct an initial review of alternatives to reduce charter harvest in Area 3A. These actions will temporarily reduce charter harvest, but are unlikely to eliminate the long-term trend for charter industry growth. The allocation and compensation mechanisms discussed here represent the first steps toward allowing the charter industry the ability to compensate the commercial sector for continued growth and allowing market forces to decide what division of the halibut resource provides greater national benefits.

3.3 Objectives and Legal Basis of the Proposed Actions

As described more fully in Section 3.2 of the RIR, the purpose and overall intent of the proposed action is to create a compensated allocation transfer mechanism between the charter and commercial sectors.

The Northern Pacific Halibut Act of 1982 (16 U.S.C. 773-773k; Pub. L. 97-176, as amended) authorizes the Secretary of Commerce to enforce the terms of the Convention between the United States and Canada for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea. The Secretary promulgates regulations pursuant to this goal in 50 C.F.R. Part 301. The Regional Fishery Management Council responsible for the geographic area concerned (i.e., the Pacific or North Pacific Council) may also develop and implement, with the approval of the Secretary, regulations as deemed necessary to fulfill the purpose of the Convention and this Act.

3.4 Description and Number of Small Entities to which the proposed actions will apply

3.4.1 Definition of a Small Entity

Three types of small entities are defined in the RFA:

Small Business. Section 601(3) of the RFA defines a small business as having the same meaning as small business concern under Section 3 of the Small Business Act. This includes any firm that is independently owned and operated and is not dominant in its field of operation. The U.S. Small Business Administration (SBA) has developed size standards to carry out the purposes of the Small Business Act, and those size standards can be found in 13 CFR 121.201. The size standards are matched to North American Industry Classification System industries. A business involved in providing fishing charter services is a small business if it is independently owned and operated and not dominant in its field of operation and if it has combined annual receipts not in excess of $6.5 million. A business involved in both the harvesting and processing of seafood products is a small business if it meets the $4.0 million criterion for fish harvesting operations. The SBA definition of a small business applies to a firm's parent company and all affiliates as a single entity.

Small organizations. The RFA defines a "small organization" as any not-for-profit enterprise that is independently owned and operated and is not dominant in its field.

Small governmental jurisdictions. The RFA defines small governmental jurisdiction as a government of a city, county, town, township, village, school district, or a special district with a population of fewer than 50,000.

3.4.2 Description of Small Entities to Which the Proposed actions will apply

Federal courts and Congress have indicated that a RFA analysis should be limited to small entities directly regulated by the proposed action.[64] The proposed options would apply to businesses providing services in the guided halibut sport fishery and the commercial halibut fishery in IPHC Regulatory Area 2C and Area 3A (Southeast and Southcentral Alaska). There do not appear to be any entities that are directly regulated by the proposed action that would qualify as either "small nonprofit" entities or "small government jurisdictions."

[64] *Mid-Tex Elec. Coop v. FERC*, 773 F.2d 327 (D.C. Cir. 1985); *Cement Kiln Recycling Coalition et. al. v. EPA*, 255 F.3d 855 (D.C. Cir. 2001).

3.4.3 Estimate of the Number of Small Entities to Which the Proposed actions will apply

The analysis concludes that all Area 2C and 3A IFQ halibut vessels and charter vessel operators are likely to be small businesses, for the purpose of this analysis. In 2006, 672 unique vessels made 3,129 halibut landings totaling 10.339 Mlb in Area 2C by IFQ halibut vessels while in Area 3A 670 unique vessel made 2,687 landings totaling 24.954 Mlb (McDowell 2007 NMFS RAM Program 2007). The number of small entities operating as fishing vessels in the IFQ Program may be deduced from certain restrictions the program places on those vessels. The IFQ program limits the amount of annual IFQ that may be landed from any individual vessel. A vessel may be used to land up to 1% of all halibut IFQ TAC in the Area. MFS annually publishes "standard prices" for halibut that are estimates of the ex-vessel prices received by fishermen for their harvests. NMFS uses these prices for calculating permit holder cost recovery fee liabilities. In 2006, the average price per pound in Area 2C and 3A ranged from $3.42 in February to $4.18 in September, October, and November. (headed and gutted weight) (50 FR 78383). These harvest limits and prices imply maximum ex-vessel revenues of about $0.952 million, for the 2006 halibut fishery in a vessel that owned the maximum amount of QS units divided in a revenue-maximizing way between Area 2C and 3A. Average vessel revenue, if all of the halibut had been sold at the 2006 maximum average price, would have been roughly $64,000 per vessel in Area 2C and $150,000 in Area 3A .

While some of the operations considered here participate in other revenue generating activities (e.g., other fisheries), the halibut fisheries likely represent the largest single source of annual gross receipts for these operations. Based upon available data, and more general information concerning the probable economic activity of vessels in this IFQ fishery, no vessel subject to these restrictions could have been used to land more than $4.0 million in combined gross receipts in 2006. Therefore, all halibut vessels have been assumed to be "small entities," for purposes of the IRFAs. This simplifying assumption likely overestimates the true number of small entities, since it does not take account of vessel affiliations, owing to an absence of reliable data on the existence and nature of these relationships.

Charter vessel operators are likely small businesses. In Area 2C 2006 ADF&G data show that there were 696 vessels operating as charters and this analysis concludes that the majority of these vessels are owned by small entities, based upon SBA criteria, since they were expected to have average annual gross revenues of less than $6.5 million. Because exact revenue figures from individual charter operators are not available, the analysis attempts to provide an estimate. Key informant interviews indicate single trip prices average between $150 and $250 per day. Hence, a single vessel could generate $180,000 in a single season, if it operated one trip per day, at fully capacity. Two trips per day for every day of the season would generate $360,000 in gross revenue. ADF&G data indicate that the average vessel took just under 35 trips in 2006, with an average client load of 3.86 passengers. Thus, the average vessel likely generated approximately $34,000 in gross revenue. While it is not uncommon in this sector for a single entity to own and operate multiple charter vessels, the analysis concludes that most operators are likely to be small businesses, based upon the $6.5 million SBA threshold for RFA. The largest companies involved in the fishery are lodges or resorts that offer accommodations as well as an assortment of visitor activities, and may be large entities under the SBA size standard. Key informant interviews conducted for this analysis indicated that the absolute largest of these companies may gross more than $6.5 million per year, but that it was also possible that all of the entities involved in charter halibut harvest grossed less than that amount. This analysis is unable to verify these estimates.

In Area 3A, ADF&G data showed that there were 625 vessels recording charter trips for halibut in 2006 for which, exact revenue figures from individual charter operators are not available. The analysis deduces that all single-vessel operators are likely small businesses based on their ability to generate revenue The charter season lasts for a approximately of 120 days between early May and mid-September and vessels are generally carry up to six paying passengers per trip. Key informant interviews indicate single trip

prices average between $150 and $250 per day. Hence, a single vessel operator could generate $180,000 in a single season if he took one trip per day at maximum capacity. Two trips per day(or carrying 12 passengers for one trip per day) at maximum capacity and sailing everyday of the season would generate $360,000 in revenue. ADF&G data indicate that the average vessel took just under 37.5 trips in 2006 with an average client load of 5.9 passengers. Thus, the average vessel likely generated approximately $55,000 in revenue. More than 118 vessels operating at maximum capacity would be needed to generate more than $6.5 million in revenue. There is no business in the affected area operating this many vessels. Thus, the analysis concludes that most operators are likely to be small businesses.

The analysis notes that not all of the charter vessels described above will qualify for a moratorium permit.

3.5 Description of the Projected Reporting, Record Keeping and Other Compliance Requirements of the Analyzed Options

3.5.1 Description of Compliance Requirements of the Analyzed Options

The proposed actions would likely result in a number of new reporting, record keeping, and compliance requirements as detailed in prior sections. Under both the common pool and individual private management options under Action 2 Alternative 2, charter operators would likely face additional harvest reporting requirements. The common pool operators would likely need a more advanced in-season reporting system than the current logbooks to ensure that the common pool did not harvest more than its QS allowed. Option 2, the individual private management option, could require charter operators to track their harvest using a method analogous to how commercial operators track their harvest. In-season enforcement of annual limits for these operators will only be effective if the operators' real time harvest can be compared against their GAF limits. As described in the Executive Summary, the need for real-time reporting will place additional demand on operators and regulators. No other recreational fishery in Alaska requires real-time reporting or involves the purchase of QS units.

3.5.2 Description of Compliance Costs Associated with the Proposed Actions

The analysis does not current have an estimate of the compliance costs associated with the analyzed options primarily because the additional harvest reporting requirements and in-season tracking measures discussed above are as yet undefined. The analyzed options will likely result in financial costs for both charter operators and state and Federal managing agencies. The analysis expects that business to business transactions between commercial and charter operators, or between commercial operators and an overarching common pool operator, will be no more difficult for commercial operators than current commercial to commercial operator transactions. If this expectation holds true then commercial operators will face limited compliance costs associated with the analyzed options.

3.6 Identification of Relevant Federal Rules that may Duplicate, Overlap or Conflict with the Proposed Actions

Section 4.0 discusses other relevant Federal rules that may need to be changed in order to prevent conflict with the analyzed alternatives.

3.7 A Description of Any Significant Options to the Proposed Action

The RFA requires a description of any significant alternatives to the proposed rule that accomplish the stated objectives of the Magnuson-Stevens Act and any other applicable statutes, and that would minimize any significant adverse economic impact of the proposed rule on small entities. This section will be completed when the Council establishes a proposed rule.

4.0 CONSISTENCY WITH OTHER APPLICABLE LAWS

4.1 Introduction

This section discusses the consistency of the proposed actions with the North Pacific Halibut Act of 1982, Magnuson-Stevens Act, and the Regulatory Flexibility Act. As noted in Section 2.5.2 the consistency of some of the analyzed options with applicable laws cannot be answered definitively until a more detailed description of the precise aspects of the program is provided.

This North Pacific Halibut Act of 1982 governs the promulgation of regulations for managing the halibut fisheries in both state and Federal waters. The language in the Halibut Act regarding the authorities of the Secretary of Commerce and the Regional Fishery Management Council is excerpted below:

> *"The Regional Fishery Management Council having authority for the geographic area concerned may develop regulations governing the U.S. portion of Convention waters, including limited access regulations, applicable to nationals or vessels of the U.S., or both, which are in addition to, and not in conflict with regulations adopted by the Commission. Such regulations shall only be implanted with the approval of the Secretary, shall not discriminate between residents of different States, and shall be consistent with the limited entry criteria set forth in Section 303(b)(6) of the Magnuson Act. If it becomes necessary to allocate or assign halibut fishing privileges among various U.S. fishermen, such allocation shall be fair and equitable to all such fishermen, based upon the rights and obligations in existing Federal law, reasonably calculated to promote conservation, and carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of the halibut fishing privileges…"*

From the language in the Halibut Act, it is clear that while jurisdictional authority for the limited access and other allocation options resides within the provisions of the Halibut Act, consideration of those types of options is subject to many of the same criteria described under the Magnuson-Stevens Act. In particular, the 303(b) (6) provisions of the Magnuson-Stevens Act and the language from National Standard 4 are directly referenced. Therefore, the following sections are included to discuss the consistency of the proposed options relative to certain provisions of the Magnuson-Stevens Act and other applicable laws, without regard for whether such treatment is formally required.

4.2 MSA Section 303(a) (9) – Fisheries Impact Statement

The Magnuson-Stevens Act requires that any management options submitted by the Council take into account potential impacts on the participants in the fisheries, as well as participants in adjacent fisheries. Without regard to whether this fisheries impact statement is formally required under the proposed action, the following information is provided. The impacts of the proposed options have been discussed in previous sections of this document. The analyzed options could influence the availability of charter trips and require certain charter and commercial fishing businesses to change their business models. The effects of changing business models and the potential movement of QS and businesses between communities could affect not only businesses, but communities as well. Participants in other fisheries (e.g., salmon, rockfish, and lingcod) could find themselves facing additional competition from any displaced halibut anglers as more QS flows into the commercial sector in the long run.

4.3 MSA Section 312(b) (2) – Fishing Capacity Reduction Program

As noted in Section 2.5.2, Section 312(b) (2) of the Magnuson-Stevens Act requires that a capacity reduction program either scrap vessels, place title restrictions on vessels, or revoke fishing permits. A Federal buyback of halibut QS would not accomplish any of these three items. Hence, Section 312(b) (2)

of the Magnuson-Stevens Act would need to change before the Fishing Capacity Reduction Program could be used as a source of funds for a Federal buyback. This change only applies to Element 1.1 of Option 1.

4.4 Changes to State of Alaska Laws for Regional Non-Profit Associations

The Regional Non-Profit Association would require a change in State of Alaska law or the creation of a new law. AS 16.10.380 and AS 44.33.065 allow the establishment Regional Aquaculture Associations and Regional Seafood Development Associations. Similar legislative packages would be needs to accommodate the Regional Non-Profit Associations discussed in Section 2.5.2.

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Appendix I. Approved June 2007 Council Motion on the Compensated Reallocation

Action 2. Implement measures to allow compensated reallocation between the commercial sector and the charter sector

Element 1: Holder of Quota Share, Method of Funding and Revenue Stream

Element 1.1: Federal – common pool

- A. Method of Funding
  - option 1. loan
  - option 2. buyout program
- B. Revenue Stream
  - option 1. halibut charter stamp
  - option 2. moratorium permit fee
  - option 3. self-assessment fee
    - suboption 1. fee is based on number of clients
    - suboption 2. fee is based on number of fish

Element 1.2: State of Alaska – common pool

- A. Method of Funding
  - option 1. loan
  - option 2. bonding
- B. Revenue Stream
  - option 1. charter stamp
  - option 2. sportfishing license surcharge
  - option 3. business license fee/surcharge or limited entry permit holder
    - suboption 1. fee is based on number of clients
    - suboption 2. fee is based on number of fish

Element 1.3: Regional private non-profit associations – common pool

- A. Method of Funding
  - option 1. loan
- B. Revenue Stream
  - option 1. self-assessment
    - Suboption 1. fee is based on number of clients
    - Suboption 2. fee is based on number of fish

Element 1.4: Individual - private (A moratorium permit would be required unless the moratorium is not in place, in which case a Guided Sportfish Business License would be required instead.)

- A. Method of Funding
  - option 1. loan programs
  - option 2. private funding

Revenue streams will be for a defined period and end after the loan or bond is paid off, i.e. continuous open-ended revenue streams are to be avoided.

Element 2: Restrictions on transferability of commercial quota share by charter sector, with grandfather clause to exempt current participants in excess of proposed limits

Element 2.1: Limits on transferability
The percentages are based on the combined commercial and charter catch limit.

A percentage of the combined commercial and charter catch limit will be available for transfer between sectors.

Option 1: 10%
Option 2: 15%
Option 3: 20%
Option 4: 25%

Element 2.2: Limits on purchase

A. entities purchasing for a common pool:
Option 1. limited annually to a percentage (30%–50%) of the average amount of QS transferred during the previous five years**.**
Option 2. Restrictions on vessel class sizes/blocked and unblocked/ blocks above and below sweep-up levels to leave entry size blocks available for the commercial market and to leave some larger blocks available for an individual trying to increase their poundage.

(These options are not intended to be mutually exclusive.)

B. individual: subject to the current ownership cap and block restrictions associated with commercial quota share

Element 2.3***:*** Limits on leasing

A. Common Pool:
The common pool may only lease 0%–15% of holdings back to the commercial sector.
B. Individual charter operators:
Option 1. an individual may not hold or control more than the amount equal to the current setline ownership cap converted to the number of fish in each area (currently 1% of the setline catch limit in Area 2C or 0.5% in Area 3A)
Option 2. an individual may not hold or control more than 2,000, 5,000, or 10,000 fish. (Note: examine this as a percentage of the catch limit once allocations are established.)
Option 3. charter operators may lease up to 10% of their QS back to commercial sector

C. Individual commercial fishermen:
i. Commercial fishermen who do not hold a sport fishing guide business license and/or moratorium permit may lease up to 10% of their annual IFQs for use as GAF[65] on an individual basis, or to a common pool.
ii. Commercial fishermen who hold QS and a sport fishing guide business license and/or a halibut moratorium license may convert all or a portion of their commercial QS to GAF

[65] GAF = Guided Angler Fish (This is used only as a charter unit of measurement for commercial quota share converted to charter use and is not indicative) of a particular long term solution.)
** indicates changes made by the AP to the Halibut Stakeholder recommendations

on a yearly basis if they own and fish it themselves on their own vessel. Commercial and charter fishing may not be conducted from the same vessel during the same day.

Element 3: Implementation Issues

1. These qualifying entities may purchase commercial QS and request NMFS to issue annual IFQs generated by these shares as Guided Angler Fish (GAF*).

2. Qualified entities harvesting GAF while participating in the guided sport halibut fishery are exempt from landing and use restrictions associated with commercial IFQ fishery, but subject to the landing and use provisions detailed below.

3. GAF would be issued in numbers of fish. The conversion between annual IFQ and GAF would be based on average weight of halibut landed in each region's charter halibut fishery (2C or 3A) during the previous year as determined by ADF&G. The long-term plan may require further conversion to some other form (e.g., angler days).

4. Subleasing of GAF would be prohibited.

5. GAF holders may request NMFS convert unused GAF into IFQ pounds for harvest in compliance with commercial fishing regulations provided the GAF holder qualifies under the commercial IFQ regulations.

6. Unused GAF may revert back to pounds of IFQ at the end of the year and be subject to the underage provisions applicable to their underlying commercial QS.

7. All compensated reallocation would be voluntary based using willing seller and willing buyer.

Option: A pro rata reduction with compensation. A pro rata reduction would not decrease the number of QS held by an individual; rather, it would decrease the size of the total commercial pool from which IFQs are annually calculated. The effect would be similar to how a decrease in abundance affects annual calculation of IFQs, except that quota share holders would be compensated for the resultant poundage reduction of their IFQs.

Option: exempt category D QS from voluntary and involuntary pro rata reduction with compensation

8. Guided angler fish derived from commercial QS may not be sold into commerce, i.e., all sport regulations remain in effect.

9. Guided angler fish derived from commercial QS may not be used to harvest fish in excess of the non-guided sport bag limit on any given day.

10. There needs to be a link between the charter business operators and the cost of increasing the charter pool. If the charter business operators do not experience the cost of increasing the charter pool, there will not be a feedback loop to balance the market system.

Appendix II. Repayment Costs Under Different Scenarios

Table 84 Per Unit Payments (2006 Conditions, GHL Allocation, 10 Year Repayment Schedule)

Unit Measure	6% Interest		7% Interest		8% Interest		9% Interest	
	Low	High	Low	High	Low	High	Low	High
Area 2C								
Per Client Day Fee	$15	$20	$15	$20	$15	$20	$15	$20
Unique User Fee (Stamp Fee)	$20	$25	$20	$25	$20	$25	$20	$30
Per Fish Harvested Fee	$10	$15	$10	$15	$10	$15	$10	$15
Per Moratorium Permits[66]	$3,200	$4,400	$3,300	$4,600	$3,500	$4,800	$3,600	$5,000
Area 3A								
Per Client Day Fee	$5	$5	$5	$5	$5	$5	$5	$10
Unique User Fee (Stamp Fee)	$5	$10	$5	$10	$5	$10	$5	$10
Per Fish Harvested Fee	$5	$5	$5	$5	$5	$5	$5	$10
Per Moratorium Permits	$1,300	$1,800	$1,400	$1,800	$1,500	$1,900	$1,500	$2,000
License Surcharge	$10.00	$15.00	$10.00	$15.00	$10.00	$15.00	$10.00	$15.00

Source: NEI Estimates, 2007

Table 85 Per Unit Payments (2006 Conditions, GHL Allocation, 5 Year Repayment Schedule)

Unit Measure	6% Interest		7% Interest		8% Interest		9% Interest	
	Low	High	Low	High	Low	High	Low	High
Area 2C								
Per Client Day Fee	$20	$30	$25	$30	$25	$30	$25	$35
Unique User Fee (Stamp Fee)	$30	$45	$30	$45	$30	$45	$35	$45
Per Fish Harvested Fee	$20	$25	$20	$25	$20	$30	$20	$30
Per Moratorium Permits[67]	$5,500	$7,700	$5,700	$7,800	$5,800	$8,000	$5,900	$8,200
Area 3A								
Per Client Day Fee	$10	$10	$10	$10	$10	$10	$10	$10
Unique User Fee (Stamp Fee)	$10	$15	$10	$15	$10	$15	$10	$15
Per Fish Harvested Fee	$5	$5	$5	$5	$5	$5	$5	$5
Per Moratorium Permits	$2,300	$3,100	$2,400	$3,100	$2,400	$3,200	$2,500	$3,300
License Surcharge	$15.00	$25.00	$15.00	$25.00	$20.00	$25.00	$20.00	$25.00

Source: NEI Estimates, 2007

66 The number of moratorium permits was provisionally estimated by ADF&G using 2006 data.

67 The number of moratorium permits was provisionally estimated by ADF&G using 2006 data.

Table 86 Per Unit Payments (2006 Conditions, GHL Allocation, 20 Year Repayment Schedule)

Unit Measure	6% Interest		7% Interest		8% Interest		9% Interest	
	Low	High	Low	High	Low	High	Low	High
Area 2C								
Per Client Day Fee	$10	$10	$10	$10	$10	$15	$10	$15
Unique User Fee (Stamp Fee)	$10	$15	$10	$15	$15	$20	$15	$20
Per Fish Harvested Fee	$5	$10	$10	$10	$10	$10	$10	$10
Per Moratorium Permits[68]	$2,000	$2,800	$2,200	$3,100	$2,400	$3,300	$2,600	$3,600
Area 3A								
Per Client Day Fee	$5	$5	$5	$5	$5	$5	$5	$5
Unique User Fee (Stamp Fee)	$5	$5	$5	$5	$5	$5	$5	$5
Per Fish Harvested Fee	$5	$5	$5	$5	$5	$5	$5	$5
Per Moratorium Permits	$900	$1,100	$900	$1,200	$1,000	$1,300	$1,100	$1,400
License Surcharge	$5.00	$10.00	$5.00	$10.00	$10.00	$10.00	$10.00	$10.00

Source: NEI Estimates, 2007

[68] The number of moratorium permits was provisionally estimated by ADF&G using 2006 data.

Appendix III. Chang and Waters (2007)

A Review of Pacific Halibut Economic Impact Studies for Alaska

Introduction

In December 2006 the North Pacific Fishery Management Council adopted a suite of management options to set an initial allocation between the commercial and charter halibut sectors in Areas 2C and 3A, and a compensated reallocation program to allow the charter sector to purchase commercial halibut quota and use the associated individual fishing quotas in the charter sport fishery.

In support of the analytical needs for the Council's decision making on this issue, the Council commissioned this review of economic impact studies relevant to Pacific halibut fisheries in Alaska.

The reviewer's tasks included:

1. Review the assumptions and impact methodologies, and critique the validity of the conclusions expressed concerning impacts estimated in the relevant studies.

2. Discuss findings with Dr. Chang Seung, AFSC.

3. Submit draft report, including an executive summary, to NPFMC.

4. Respond to comments and submit final report to the NPFMC.

The nine studies reviewed for this report are listed below. These include seven papers (items 1 through 7) identified in the memorandum of understanding, and two additional papers (items 8 and 9) that were later added to the scope of work by mutual agreement.

1. Criddle, K., M. Herrmann, S.T. Lee, and C. Hamel, Participation Decisions, Angler Welfare, and the Regional Impact of Sportfishing. Marine Resource Economics. Volume 18, pp. 291-312. 2003.

2. Criddle. K. Economic Principles of Sustainable Multi-use Fisheries Management with a Case History Economic Model for Pacific Halibut. American Fisheries Society Symposium. Volume 43. pp. 143-171, 2004.

3. Hamel, C., M. Herrmann, S.T. Lee, K.R. Criddle, and H.T. Geier. Linking Sportfishing Trip Attributes, Participation Decisions, and Regional Economic Impacts in Lower and Central Cook Inlet, Alaska. The Annals of Regional Science. Volume 36. pp. 247-264. 2002.

4. Herrmann, M., S.T. Lee, K.R. Criddle, and C. Hamel. A Survey of Participants in the Lower and Central Cook Inlet Halibut and Salmon Sport Fisheries. Alaska Fishery Research Bulletin. Volume 8, Number 2, Winter 2001.

5. Herrmann, M., S.T. Lee, C. Hamel, K.R. Criddle, H.T. Geier, J.A. Greenberg and C.E. Lewis. An Economic Assessment of the Sport Fisheries for Halibut, Chinook, and Coho Salmon in the Lower Cook Inlet. Final Report Prepared for the Minerals Management Service, Coastal Marine Institute, April 2000, University of Alaska Fairbanks.

6. Herrmann, M. and K.R. Criddle. An Econometric Model for the Pacific Halibut Fishery. Marine Resource Economics. Volume 21, No. 2. 2006.

7. McDowell Group. Economic Impact of the Commercial Halibut Fisheries in Areas 2C and 3A, April 2007.

8. McDowell Group. Sitka Charter Fishing Visitor Profile and Impact Analysis: Alaska Travelers Survey, January 2005.

9. Northern Economics Inc., Impact of the Seafood Industry on Alaska's Economy, February 2003.

For purposes of discussion, the studies have been grouped into four categories, A – D. Also, for convenience, the order in which the studies appear in the above list will be used to reference individual papers in this review. Studies included in each group are listed below and also shown in Table 1, below. The list includes four studies that estimated sport fishery economic impacts and / or described the underlying angler survey methodology (Numbers 1, 3, 4, and 5); one study summarizing results of a survey of tourist fishing expenditures and economic impacts (Number 8); two studies estimating economic impacts of commercial fisheries (Numbers 7 and 9); and two studies describing simulation model results for the commercial and/or sport fisheries but not including economic impacts (Numbers 2 and 6).

Impact Study Categories:

A. **Sport Halibut Impact Studies-Kenai Peninsula**: In this category there are three Input-Output (IO) studies of impacts of sport angling in Cook Inlet (studies 1, 3 and 5), and one study describing the 1997 University of Alaska Fairbanks angler survey on which all three studies are based (study 4).

B. **Sport Halibut Impact Study-Sitka**: This category includes a single IO study of impacts of sport angling in Sitka based on a 2005 Alaska Travelers' Survey (study number 8).

C. **Commercial Fisheries Impact Studies**: This category consists of the only two studies of commercial fishing and processing impacts in this review. Although the two studies are very different in both focus and scope, they have been grouped together here for convenience and ease of comparison. Study 7 looked exclusively at the commercial fishery for Pacific halibut in areas 2C and 3A; while study 9 estimated impacts of harvesting and associated seafood processing for all major commercial species in Alaska, including Pacific halibut.

D. **Non-Impact Simulation Model Studies**: This category includes two studies of the effects of external events on ex-vessel halibut markets (study 2); and the net benefits-maximizing allocation of Pacific halibut between commercial and sport fisheries (study 6). Neither of these studies estimated economic impacts per se.

This review focuses on the economic impact results generated using IO models presented in studies 1, 3, 5, 7, 8 and 9. Studies 1, 2, 3 and 5 also present estimates of net benefits accruing to sport and/or commercial fisheries beneficiaries; however these are not reviewed extensively in this report.

Table 1. Key aspects of the studies reviewed in this document

Category	Study Number	Authors	Year of Pub.	Study Area or Region	Commercial or Sport?	Data Year(s)	Species	Economic Impact Estimates?	Net Benefit Estimates?	Economic Models Used*
A	1	Criddle, Herrmann, Lee, and Hamel	2003	Kenai Peninsula	Sport	1997	Pacific halibut	Yes	Yes	IO and CV
	3	Hamel, Herrmann, Lee, Criddle, and Geier	2002	Kenai Peninsula	Sport	1997	Pacific halibut	Yes	Yes	IO and CV
	4	Herrmann, Lee, Criddle, and Hamel	2001	Kenai Peninsula	Sport	1997	Pacific halibut	No	No	NA
	5	Herrmann, Lee, Hamel, Criddle, Geier, Greenberg and Lewis	2000	Kenai Peninsula	Sport	1997	Pacific halibut	Yes	Yes	IO and CV
B	8	McDowell Group	2005	Sitka	Sport	2005	Pacific halibut	Yes	No	IO
C	7	McDowell Group	2007	Ports receiving landings from IPHC Areas 2C and 3A	Commercial	2000 thru 2005	Pacific halibut	Yes	No	IO
	9	Northern Economics Inc.	2003	State of Alaska	Commercial	2001	Eight commercial target species groups, including Pacific halibut	Yes	No	IO
D	2	Criddle.	2004	Central GOA	Commercial and Sport	Com: 1994(?) Sport: 1997	Pacific halibut	No	Yes	Optimization / Simulation Model
	6	Herrmann, M. and K.R. Criddle	2006	Alaska and BC ex-vessel markets	Commercial	1976-2002 (time series)	Pacific halibut	No	No	Econometric Market Model

* IO = Input-Output model of a regional economy.

CV = Contingent Valuation model of sport angler behavior.

Regional Economic Impact Definitions and Mechanisms

The following list of definitions is intended to help the reader to follow the discussion in this report.

Direct Effects: The amount of initial expenditure or demand that triggers the multiplier effects. For commercial fisheries, the direct effect is usually considered as the first wholesale value received by processors for product sold, which includes the amounts paid for ex-vessel purchases of raw fish inputs. For sport fisheries, the direct effect usually consists of the amounts an angler pays for goods and services directly related to their fishing experience.

First Wholesale Value: The amount of money a processor receives for product after first processing. Equal to the quantity of processed product multiplied by the wholesale price after primary processing.

Imports: Goods and services produced outside the study area that are consumed by industries or households in the study area. Imports of services include payments to non-resident labor or owners of capital.

Indirect Business Taxes: Consist of excise taxes, property taxes, fees, licenses, and sales taxes paid by businesses.

Indirect Effects: Secondary activity caused by the changing input needs of directly affected industries. Indirect effects include the change in demand resulting from spending by suppliers and contractors who sell to the directly affected industries.

Induced Effects: Induced effects are caused by changes in household spending due to additional employment generated by direct and indirect effects.

Leakage: Economic leakage is the proportion of total expenditures leaving a region to purchase imported goods and services, including labor.

Multipliers: The total impact divided by the direct effect. Output multipliers are used to translate a direct spending impact into a change in total output in an economy. Other types of multipliers commonly in use measure income effects (dollars of income generated per dollar of additional direct spending), or employment effects (number of jobs generated per unit of additional direct spending).

Net Benefits: Net benefits are measure of the net value (value received minus the dollar amount paid) accruing to a group of recipients. The two main types of net benefits normally considered are producer surplus (revenues minus costs), and consumer surplus (willingness to pay minus the amount actually paid). Several types of non-use benefits (e.g., existence value, option value and bequeathal value) have also been defined.

Payments to Labor: Employee compensation and proprietors' income paid to workers in the economy.

Payments to Capital: Dividends, interest and rent paid to owners of capital.

Personal Income: The portion of total output paid by industries as wages, salaries, proprietors' incomes, dividends, interest and rent, representing compensation for the use of labor and capital

services. Normally in regional IO models, change in personal income means change in labor income due to the difficulty of identifying the residence of capital owners.

Total Impact: The sum of direct, indirect and induced effects.

Total Output: total value of goods and services produced by an industry in an economy, which is equal to total industry expenditures and consists of purchases of inputs from other industries in the region; payments to labor, capital and indirect business taxes; and payments for goods and services imported from outside the region.

It may also help if the reader can visualize the impact mechanisms underlying commercial fisheries and sport fisheries economic impacts. The following examples, although very simplified, are intended to illustrate the transmission of economic impacts in an economy.

Commercial Fisheries Economic Impacts

Commercial fishermen use their vessels (capital) and other inputs to catch fish. When fishermen land their catch they receive payment from the buyer. This is called ex-vessel revenue. From this revenue, vessel operators purchase inputs from suppliers including fuel, lubricants, fishing gear, ice, bait and food for the crew, among others. Vessel operators also hire crew and pay themselves and the vessel owners. Buyers either sell the fish whole on to another buyer or consumer, or process the raw fish in their plants (capital) into product for the wholesale market. Processors receive first wholesale value for their processed fish product, from which they purchase inputs from suppliers (fuel, electricity, water, equipment, etc.), and pay wages and salaries to workers and managers and a net income to themselves. The product is shipped on to retail markets where it is eventually sold to consumers.

In calculating commercial fisheries impacts, the direct effects include amounts paid for fish purchased directly off the dock plus first wholesale value received by processors, (which includes ex-vessel value as a cost). Indirect effects include spending by suppliers of fuel, gear, ice, bait, food, electricity, water, equipment, etc. who sell directly to vessels and processors. Induced effects include the economic activity driven by the spending of income by fishing and processing crews, owners of the vessels and plants, and employees of the suppliers. Adding up all the rounds of re-spending in the economy produces the estimate of total economic impact. Adding up the amount of income paid out of the total output change produces the total income impact. Likewise for the number of jobs generated.

Note that commercial fishing impact estimates do not generally address effects on sport anglers or consumers of processed seafood.

Sport Fisheries Economic Impacts

The mechanism for transmitting economic impacts of spending by sport anglers is much the same as for commercial fisheries impacts, except the set of affected industries is different. Industries that receive expenditures from sport anglers include guide and charter services; eating, drinking and lodging establishments; sellers of sporting goods; and custom packers of sport catch; among others. These tend to be service-based industries. These businesses receive payment from the sport anglers and use the proceeds purchase to pay their workers and purchase inputs from support industries.

In the case of sport fisheries, the direct effects are the list of payments made by anglers for the goods and services directly related to their fishing experience. However it is sometimes difficult to determine whether expenditures are a direct result of the fishing trip or are related to another non-fishing activity. Researchers usually apportion expenditures among the different activities, and also make assumptions

regarding which expenditures were made locally versus at home or en route. For this reason, total impact estimates, the sum of all direct, indirect and induced spending in the economy, can vary considerably depending on the share of total angler expenditures assumed to be both local and fishing-related.

Note that sport fishing impact estimates do not generally address effects on commercial fishers or consumers of processed seafood. Nor do they address any net benefits (i.e., willingness to pay minus the amount actually paid) enjoyed by the sport anglers themselves.

Impacts vs. Benefits[69]

Economic impacts are not the same as net benefits and the two concepts are not directly comparable. Economic impacts are a measure of the amount of money changing hands in a regional economy (i.e., the dollar value of transactions), while net benefits are a measure of the net value (value received in excess of the dollar amount paid) received by a defined group of recipients. For producers, net benefit roughly equates to economic profit. For consumers and non-users, net benefits are more difficult to measure and usually depend on administration of a carefully designed survey.

Economic impacts are typically determined using IO models. In an IO model, industries produce and sell "output" by combining goods and services purchased from other industries and households in the regional economy, and from elsewhere. Purchased inputs that are produced elsewhere are called "imports". The total amount paid by an industry for all inputs used in production, including goods, services, imports, taxes and depreciation is called total expenditure.

In IO models total expenditure is the broadest measure of economic activity and is equal to total output or total sales by the industry. Total output is simply a measure of the amount of turnover, or total funds flowing through an economy. Total output can bear little resemblance to the amount of value generated in the economy. For example, suppose a luxury car dealer sells an imported car for $100,000. Total sales in the economy are $100,000 but most of that amount goes overseas to pay for the factory where the car was made, shipping across the ocean, and delivery to the local dealership. Of the remainder, the dealer must pay her costs, including utilities, insurance, interest, advertising, commissions or salaries for her employees and a small profit for herself. These latter two items are classified as "income."

The portion of total output paid by industries as wages, salaries, proprietors' incomes, dividends, interest and rent represent compensation for the use of labor and capital services. These industry production costs become income directly to the recipients. In total these payments are the components of personal income.

However even personal income is not a net benefit because (1) some of the costs of resources used and opportunity costs are not counted, and (2) changes in personal income may not necessarily accrue to the persons who resided in the region before the change occurred. While personal income is a closer measure of regional benefits than is total output, total sales or total expenditures, they are still not the same things.

In IO analysis the impacts of all incremental changes are calculated using average cost shares, which are assumed to not change. In actual fact this may not be a valid assumption. An incremental change that increases business activity, such as increased fishing opportunity, may result in a distribution of incremental costs that is different from the average distribution pre-impact. Unemployed persons in the region may not have the skills needed to meet the increased demand for their services, so a larger-than-average share of resources may need to be imported, or above average wages paid to lure workers away

[69] Much of the discussion in this section is adapted from the document: Independent Economic Analysis Board (IEAB), *Review of the Estimated Economic Impacts of Salmon Fishing in Idaho*, Document IEAB 2005-2, December 5, 2005. (http://www.nwcouncil.org/library/ieab/ieab2005-2.htm).

from other employment, thereby increasing average costs. IO would generally not capture this effect, while benefit/cost analysis, with its focus on opportunity costs of resources, would.

Economic impact models normally track incomes paid by businesses in a region but not necessarily to a specific group of recipients. Some income is paid to resident households, and some is paid to non-residents. Income paid to non-residents and purchases of goods and services produced non-locally represent imports into the region. Payments for imports do not count as income from the perspective of regional residents, and so do not figure in the calculation of benefits for residents.

Benefit/cost analysis is used to calculate net benefits (benefits minus costs) accruing to a defined group of people as a result of a change, such as increased fishing opportunities. Two main types of benefits are normally included: benefits to producers (revenues minus costs), and benefits to consumers (willingness to pay net of the amount that was actually paid). Some types of benefits are not revealed by the dollar value of transactions. Regional residents are concerned with their personal income, but there are many other factors affecting their net benefits. For example, cost of living and quality of life considerations are measurable but not usually included in economic impact studies. There are also several types of non-market benefits associated with natural resources, including option value (benefit of knowing a resource will be available in the future should one ever want to use it), existence value (benefit of knowing a resource exists in good order), bequeathal value (benefit of knowing the resource will be there for future generations). These types of non-market values are derivable in theory but seldom actually estimated.

The three primary steps in developing an economic impact assessment of a management change are: (1) forecast the direct change in activity that will be triggered by the management change; (2) estimate the direct change in expenditures associated with this activity; and (3) run the model to determine the income impact due to the change in economic activity caused by the direct change in expenditures.

To calculate net benefits, some additional analysis is required; including, an assessment of how much of the income change represents a shift away from other local expenditure, how much of the income impact will be paid to local residents vs. non-residents, and what is the value of other opportunities foregone because of the income-earning activity.

Description of Results

This section describes the key impact results derived from estimates found in the studies. In a few cases, information from additional sources is brought in, for example the halibut ex-vessel price series maintained by CFEC. The following descriptions are organized by category A-D. The focus is on impact estimates but in some cases other results are also described.

Category A: Sport Halibut Impact Studies-Kenai Peninsula

The four studies in **category A** addressed impacts of sport fishing for halibut, salmon and groundfish species in Cook Inlet. While study number 4 did not report economic impacts, it gave a detailed description of the 1997 sport angler survey administered by University of Alaska Fairbanks, and the methodology for estimating the local angler expenditures that were used to generate economic impacts in studies 1, 3 and 5. In addition to reporting economic impacts, studies 1 and 5 also estimated net benefits (compensating variation) realized by halibut sport anglers. Study number 3 was a more concise treatment of the detailed methodology and results reported in study number 5, but omitted reporting net benefits.

Income impact methodologies used in the studies in category A are presumably identical. All used consistent estimation methodologies based on a modified IMPLAN model of the Kenai Peninsula. IMPLAN data for several sectors connected with the commercial and sport fishing industries in that

region were modified based on examination of ES 202 data, commercial fishing permit and crew license data; and interviews with operators of representative businesses in the local commercial fishing, sport fishing, hotel and lodging, and custom seafood processing industries.

The authors developed estimates of sport angler expenditures in the Kenai Peninsula region based on the sport angler survey conducted by UAF in 1997 reported in study number 4. Expenditures were partitioned into local, other Alaska and outside Alaska categories based on the survey respondents' place of residence and assumptions about where spending likely occurred during each fishing trip. For local residents, most trip-related expenditures were assumed to have been incurred locally. Spending by residents from other places in Alaska and from places outside Alaska was distributed between trip origination, destination and places en route based on the assumptions. A simulation procedure was used to aggregate individual decisions across survey responses and to estimate total sport fishing effort. The study reported average daily expenditures (fishing plus non-fishing related) in 1997 of $167 for local resident anglers, $205 for anglers from elsewhere in Alaska, and $294 for anglers from outside Alaska. Of these amounts, average daily fishing expenditures were $137, $129 and $190, respectively, for the three groups.

The authors also used the UAF survey to estimate a contingent valuation (random effects probit) model of likely angler participation response given change in key trip attributes, including expected catch of halibut and total trip costs. The participation model was then used to predict the change in number of angler-days fished in response to hypothetical changes in the expected catch of halibut resulting from, for example, change in fishing regulations or environmental conditions. Percent change in angler participation was predicted for increases and decreases in expected catch of 10%, 20% and 30% with respect to the 1997 baseline level. Study number 1 extended the range to include the participation response to changes of plus or minus 40% and 50% expected catch of halibut. Study number 1 also reported predicted angler participation response to increases in trip cost of $5, $10, $15, $25 and $50.

Estimated average trip costs and the range of predicted angler responses from the participation model were combined and run as direct expenditure shocks in the Kenai Peninsula IO model. Model outputs reported include change in output (studies 3 and 5), personal income (studies 1, 3 and 5), and employment (studies 1, 3 and 5).

Although output, income and employment impacts reported in studies 3 and 5 are identical, the percent changes in participation underlying these effects differ slightly. Since change in angler expenditures is not reported in study 5, it is difficult to reconcile the difference between the two studies. Effects on participation and changes in expenditures, income and employment shown in study number 1 are uniformly lower in magnitude than in studies 3 and 5. But the ratio of change in participation to change in personal income is the same in all three studies, indicating that any discrepancies between results reported by the three studies lie with the participation model rather than with the IO model.

Results shown in tables 4, 5 and 54, respectively, of studies 1, 3 and 5 can be used to derive the following ratios of economic impact in the Kenai Peninsula regional economy per dollar of fishing-related expenditures:

> Total output / initial expenditures = 1.45 (i.e., each dollar of spending by sport anglers generates an additional $0.45 in the local economy).
>
> Personal income / initial expenditures = 0.61 (i.e., each dollar of spending by sport anglers generates $0.61 of personal income in the local economy).
>
> Total jobs / initial expenditures = 42 jobs per $ million (i.e., 42 jobs are generated by each million dollars of spending by sport anglers in the local economy).

The following estimates of impacts per angler day were derived from table 4 in study 1. These estimates would be slightly different if results from study 3 or study 5 were used instead. In cases where a range of impacts per angler day is implied in table 4 of study 1 due to the non-linear nature of the angler participation model, the median result is reported below.

Average initial fishing related expenditures per angler day = $144.

Average total output generated per angler day = $225 (assuming ratio of total output to initial expenditures = 1.45).

Average total income generated per angler day = $68.

Category B: Sport Halibut Impact Study-Sitka

Study number 8, the sole member of **category B**, uses results from a 2005 survey of Alaska air travelers, IMPLAN, and other information to estimate economic impacts of charter fishing on the Sitka economy. The Alaska Travelers Survey of 10,400 charter anglers included 9,000 lodge package customers who spent an average of $2,271 per trip, and 1,400 day charter customers who spent $1,353 per trip on average. The study reports various statistics on survey respondents but does not estimate a model of angler participation or net benefits.

The study reports that surveyed visitors spent an average of 4.8 nights in Sitka. If we assume this represents an average of about 5 days in Sitka per visitor, and that both categories of customers stayed the same average length of time, then average expenditures are about $454 per day for lodge package customers and about $270 per day for day charter customers. The combined average is about $429 per day. Note that these totals likely include non-fishing related expenditures that are not included in the results for the studies in category A discussed above.

There is not enough information to understand how the IMPLAN model was constructed for this study, how expenditure estimates were derived or how these were run in the IMPLAN model. The study reports that in 2005, charter customers spent $23 million in Sitka, generating $31 million in total output, and benefiting 350 to 400 people who earned income directly or indirectly from charter fishing activity.

These results imply an output to initial expenditure ratio (multiplier) of about 1.35, i.e., each dollar of spending by charter customers generates an additional $0.35 in the local Sitka economy. Similarly, each million dollars of spending by charter customers generates earned income for about 15 to 17 people. Assuming an average of about 5 days per visitor, this translates into about $596 total output generated per angler-day.

Category C: Commercial Fisheries Impact Studies

The two studies in **category C** (studies 7 and 9) are the only two studies reviewed that addressed economic impacts of commercial fisheries. However while similar at a superficial level, the two studies are very different in focus and in scope.

Study 7 reports annual economic impacts from 2000 through 2005 derived from commercial Pacific halibut harvesting and processing in areas 2C and 3A. The study focuses in depth on the Pacific halibut fishery in a specific area and incorporates assumptions that are unique to that fishery. The effect of a crucial assumption regarding the distribution of direct income from halibut harvesting is addressed below. Impact measures reported in study 7 include personal income generated and total economic output.

In contrast, study 9 is a comprehensive attempt to estimate economic impacts of all commercial fisheries and associated seafood processing in Alaska, by region (Aleutians and Pribilof Islands, Bristol Bay, Kodiak Northwest and Arctic and Yukon-Kuskokwim, Southcentral, and Southeast), fisheries management jurisdiction (federal, state, and joint), and state of residency of fisheries participants (Alaska, Washington, Oregon, California, and elsewhere). Study 9 also estimates statewide commercial fisheries impacts by major target species (Crab and Shellfish, Flatfish, Pacific Halibut, Herring, Other Groundfish, Pacific Cod, Pollock, and Salmon). The statewide impact estimates reported for Pacific halibut are only one small part of the analysis of the total impacts of commercial fishing and associated seafood processing activities in Alaska. The report does not use specific impact assumptions by region, industry or species. Rather it applies averages for the entire Alaska harvesting and seafood processing industry for each specific unit analyzed.

This review of studies 7 and 9 focuses on the estimates of total output and income attributed to commercial fisheries for Pacific halibut. Both studies use IO models constructed in IMPLAN. Information in both studies can be used to derive the implied total output and income per ex-vessel dollar that underlies the studies' results. Information in study 7 can also be used to derive implied total output and total income per ex-vessel lb of halibut landed.

Ex-vessel halibut price data from CFEC can be used to derive the implied total output and total income per ex-vessel lb of halibut landed in study 9. However information reported in study 9 is in graphical form, so reading the values from the graphs can be inexact. Values for study 9 reported in this review are careful interpretations of figures 2.20 through 2.25.

In study 7, results were reported for six years, 2000 through 2005. The methodology used was consistent and the results are similar each year. Study 9 reported estimates for a single year: 2001. For comparability, this review focuses on results presented in both studies for 2001 only. Also for simplicity and ease of comparison, results from areas 2C and 3A in study 7 are combined and reported in aggregate. While this procedure masks some of the geographical detail presented, it helps to illustrate the main results of the study and facilitates comparison with study 9 and other studies in this review.

Study 7 reports that $60 million ex-vessel value of halibut was landed in combined areas 2C and 3A in 2001. Harvesting of this catch generated about $45 million in estimated direct payments to labor, and processing generated an additional $3.1 million in payments to processing labor. Total output in the combined regional economies generated from halibut harvesting, processing and support activities, including direct, indirect and induced effects, was estimated to be about $114.4 million. This activity generated an estimated $62.9 million total in personal income, including direct, indirect and induced effects.

Calculation of several ratios from this data will be useful in comparing the results of this study with the results of other studies in this review. The results reported above imply that the ratio of direct payments to harvesting and processing labor to total ex-vessel revenue is about 0.80. The ratio of total personal income to total ex-vessel revenue is about 1.05, and the ratio of total output to total ex-vessel revenue is about 1.91.

Study 9 reports that $118.9 million ex-vessel value of Pacific halibut was landed in Alaska 2001. Harvesting and processing of this catch generated about $70 million in estimated direct payments to labor. Total output in the Alaska economy from halibut harvesting, processing and support activities, including direct, indirect and induced effects, was estimated to be about $200 million. This activity includes an estimated $90 million in total payments to labor, including direct, indirect and induced effects.

These results imply that the ratio of direct payments to harvesting and processing labor to total ex-vessel revenue in study 9 is about 0.59. The ratio of total personal income to total ex-vessel revenue is about 0.76, and the ratio of total output to total ex-vessel revenue is about 1.68.

The biggest difference between the results presented in these two studies is the assumption that 75% of ex-vessel revenue becomes personal income for participants in the halibut fishery used in study 7, compared with 40% assumed in study 9. A discussion of the effect of this assumption and other issues follows in the section "Comparison and Discussion of Results".

Category D: Non-Impact Simulation Model Studies

Studies 2 and 6 in **category D** are, respectively, a simulation model of the net benefits-maximizing allocation of Pacific halibut, and an econometric model of the ex-vessel market for Pacific halibut. Neither model was used to estimate economic impacts, so the results are not comparable with the studies in categories A, B and C. Study 2 is a simulation model of the net benefits-maximizing allocation of Pacific halibut between commercial and sport fisheries in the central Gulf of Alaska. Study 2 concludes that in a commercial-only fishery, since ex-vessel price is inversely related to the magnitude of commercial harvest, total ex-vessel revenues would be maximized at a harvest level below maximum sustainable yield, h_{msy}. When benefits to consumers are also considered, the optimal harvest level is higher. Consumer surplus (the measure of benefit to consumers) is positively related to the commercial harvest level, and so is maximized at h_{msy}. Net benefits to the sport fishery are also maximized under a strategy of maximum sustainable yield, but the increase in net benefits is small for allocations above 20 million lbs. The overall optimal solution for joint maximization of benefits to commercial fishers, sport fishers and consumers is to manage for a biomass of 443.5 million lbs and to allocate 71% of the sustainable yield (44.9 million lbs) to the commercial fishery and the rest (18 million lbs) to sport fishing. The overall optimal solution is estimated to provide $55.2 million net revenues to commercial harvesters, $26.2 million in consumer surplus to purchasers of commercial catch, and $51.9 million in net benefits to sport anglers.

Study number 6 is an econometric model of effects on ex-vessel markets resulting from hypothetical changes in management measures and infiltration of farmed Pacific halibut into consumer markets. It is probably the least relevant to our review because it doesn't include estimation of income impacts and it treats large management or market changes in fairly general terms. The study concludes that current commercial halibut catch levels could be increased without adversely affecting ex-vessel revenues; individual fishing quotas (IFQ) increase ex-vessel and wholesale prices while leaving wholesale margins unchanged; and farmed halibut entering the market will reduce ex-vessel prices and revenues, and reduce the value of halibut IFQ.

Comparison and Discussion of Results

This section summarizes and compares sport fishing and commercial fishery impacts between comparable studies. Note there are really only two comparisons to make for sport fishing impacts (category A vs. category B), and two comparisons for commercial fisheries impacts (study 7 vs. study 9 in category C).

Derived Sport Fisheries Impacts

The following table summarizes the main results from the sport fishery impacts estimated in category A studies 1, 3 and 5; and category B study 8.

Table 2. Comparison of derived sport fishery impact measures.

Category	Study Number	Impacts per angler expenditure			Impacts per angler day		
		Total Output / $ Initial Expends	Total Personal Income / $ Initial Expends	Total Jobs per Million $ Initial Expends	Initial Expends per Angler day	Total Output per Angler day	Total Income per Angler day
A	1,3,5	$1.45	$0.61	42	$144	$225	$68
B	8	$1.35	*	15 - 17	$429	$596	*
* Not enough information is available to calculate this quantity.							

Note that the estimates of total output to initial angler expenditures in category A and category B are fairly close. Estimated output of $1.45 per dollar of angler expenditure in category A are about 7% high than in category B. However estimated jobs per million dollars of initial expenditures are considerably different. Category A's estimate of 42 jobs per million dollars is more than double category B's estimate of 15 to 17. Presumably the difference in these estimates is mostly due to the relative size of the respective regional economies. The Kenai Peninsula economy modeled in the studies in category A is larger and more diverse than the Sitka economy modeled in study 8.

The results shown under "impacts per angler day" indicate that the expenditures per angler day included for analysis were significantly higher in category B than in category A. This is probably mostly due to three factors: (1) category B was addressing charter customers only while category A included some private boat and shore anglers; (2) category A only included local "fishing-related" expenditures in the analysis while category B presumably included more types of expenditures; and (3) the survey in category A was administered eight years before the survey in category B. Table 5 in study 5 shows that, including non-fishing expenditures, non-resident charter anglers spent an average of $294 per day in 1997. Assuming an annual consumer inflation rate of 4.8% during the intervening eight years, $294 in 1997 is equivalent to about $428 in 2005.

Derived Commercial Fisheries Impacts

The following table summarizes the main results from the commercial fishery impact estimates for 2001 found in studies 7 and 9.

Table 3. Comparison of derived commercial fishery impact measures.

Category	Study Number	Impacts per ex-vessel lb			Impacts per ex-vessel $		
		Direct Income Payments per ex-vessel lb	Total Output per Ex-vessel lb	Income Impact per Ex-vessel lb	Direct Income Payments per Ex-vessel $	Total Output per Ex-vessel $	Income Impact per Ex-vessel $
C	7	1.645	3.912	2.153	0.801	1.906	1.049
	9	1.172	3.347	1.506	0.589	1.682	0.757

Impact results shown in the table are expressed in terms of ex-vessel lbs and ex-vessel revenue dollars. Other things equal, one would expect the multiplier effects to be larger in study 9 than in study 7 because the regional economy in study 7 is only a small subset of the State of Alaska economy modeled in study

9. Smaller regional economies are less diverse, have fewer internal linkages between sectors, and greater "leakage" to the outside world. Therefore multiplier effects in smaller economies tend to be less than in larger ones. However the table shows that impact results derived from the estimates in study 7 are higher across the board both in terms of ex-vessel lb and ex-vessel dollars.

The main factor underlying the different results is the difference in the amount of direct income impact assumed in the two studies. In study 7 it is assumed that 75% of ex-vessel revenue becomes direct personal income for halibut harvesters, compared with 40% assumed in study 9. The choice of the amount of direct income to allocate to regional households is usually the single most influential assumption in IO modeling, and so drives the results. The difference in assumptions between the two studies is presumably mostly to do with the treatment of halibut quota payments. Study 7 apparently assumes 50% of ex-vessel revenue comes off the top to pay halibut quota holders, and 50% of remaining ex-vessel revenue goes to pay captain and crew of the fishing vessel. Study 9, on the other hand, assumed an across the board industry-average rate of 40% of ex-vessel revenue paid to harvesting labor in Alaska fisheries. In study 9, payment for harvesting quota is probably treated as an expense, much the same as food or fuel. Most of this is probably assumed to leave the region. Depending on the residence of quota owners, the 75% assumed in study 7may in fact be reasonable for a low-processing, high unit value fishery like Pacific halibut.

Another important assumption in impact modeling is the amount of economic "leakage" in the economy. Leakage is the proportion of total expenditures leaving a region to purchase imported goods and services, including labor. The Alaska economy is characterized by a large leakage of labor income since a large proportion of workers in some Alaska industries are non-residents. For example, in 1998, nonresidents accounted for about 19.5% of total private and state and local government employment in Alaska. Leakages of labor earnings paid to non-resident workers are highest in the seafood processing (59.5%), and commercial fishing (32.0%) sectors.[70] Table 15 in study 7 shows that 10% of halibut quota is owned by non-local Alaska residents and 38% is owned by non-residents. The authors of study 7 allude to this issue but do not adjust their impact estimates to account for it. Properly accounting for these two forms of leakage (non-resident workers in the fishing and seafood processing sectors, and non-resident quota owners) would greatly reduce the estimated economic impacts.

Conclusion

For fisheries policy makers, the decision of whose welfare or benefit is most important in formulating fishery policies (commercial fishermen, processors, sport anglers, community residents, consumers, or the U.S. population as a whole) is ultimately the toughest one. Although the studies in this review focus on the economic impacts on regions of interest in Alaska, impacts on other regions/states and benefits enjoyed by the U.S. general public might need to be considered. From a national perspective, the highest-value use of public resources is achieved by maximizing net benefits where all values and opportunity costs are considered. However from the standpoint of the local economy, economic impacts are more important than net benefits, as impacts represent an actual flow of funds in the economy. An alternative that generates positive income impacts on fishing communities may not increase net national benefits, while one that maximizes national benefits may leave the local communities out in the cold. Consequently, meeting the dual requirements of maximizing net benefits to the nation while minimizing adverse effects on local fishing communities has always been something of a juggling act.

[70] See Seung, Chang and Edward Waters. 2006. The Role of the Alaska Seafood Industry: A Social Accounting Matrix (SAM) Model Approach to Economic Base Analysis. The Annals of Regional Science, Vol. 40, No. 2, pp. 335-350.

Since the purpose of this review is to provide the policy makers with information on allocating halibut catch between commercial and sport fishery sectors, it would be nice to find some measure of the relative economic impact of a unit of halibut catch in commercial vs. sport fishing sectors, and to compare these two. Efforts like study number 2 (Criddle, 2004) come closest to this by incorporating values from several different interest groups to arrive at an estimate of the benefits-maximizing allocation of halibut between commercial and sport fisheries. Assuming the model is correctly parameterized, this result is by far the most ambitious effort to solve the riddle so far.

However there doesn't seem to be enough information in the economic impact studies themselves to be able to make this type of comparison. Differences in definition of the study area, expenditure allocation assumptions, and catch reporting in the commercial and sport halibut fisheries studies (e.g., dressed weight or revenue vs. whole weight or number of fish) all contribute to this difficulty.

Finally, as an editorial comment, it would be helpful if economic impact studies would focus on presenting income and employment impacts. Income and employment are the closest impact measures available to approximating local net benefits. Impacts described in term of total output or total sales effects have little meaning, especially in a very open economy like Alaska's, and generally only serve to confuse the magnitude of the actual effects.