

**DRAFT FOR SECRETARIAL REVIEW**  
**Regulatory Amendment for a Catch Sharing Plan**  
**For the Pacific Halibut Charter and Commercial Longline**  
**Sectors in International Pacific Halibut Commission**  
**Regulatory Areas 2C and 3A**

**Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis**

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**Lead Agency:** North Pacific Fishery Management Council  
605 W. 4th Avenue, Suite 306  
Anchorage, Alaska 99501

**Responsible Official:** Dr. James Balsiger, Alaska Regional Administrator  
National Marine Fisheries Service  
709 W. 9th Street  
Juneau, Alaska 99802-1668  
(907) 586-7221

<b>Contact:</b>	Jane DiCosimo	Rachel Baker
	North Pacific Fishery Management Council	National Marine Fisheries Service
	605 W. 4th Avenue, Suite 306	709 W. 9th Street
	Anchorage, Alaska 99501	Juneau, Alaska 99802-1668
	(907) 271-2809	(907) 586-7228

**Abstract:** This analysis examines proposed changes to the management of Pacific halibut in the charter fisheries and commercial setline fisheries in International Pacific Halibut Commission (IPHC) Regulatory Areas 2C and 3A in the Gulf of Alaska. The preferred alternative would implement a catch sharing plan for the charter and commercial sectors in these areas to resolve conservation and allocation concerns that have resulted from increased harvests in the charter halibut fishery in both areas, and decreased catch limits in the commercial setline fisheries in Area 2C. The plan would (1) replace the current guideline harvest levels (GHLs); (2) set initial allocations for each sector; (3) implement management measures to limit charter harvests to the allocations; and (4) allow charter halibut limited entry permit (LEP) holders to lease halibut individual fishing quota from commercial quota share holders, to increase their seasonal allocations for use by their clients. The plan would require pre-season notice of upcoming management measures to allow an uninterrupted charter season. The North Pacific Fishery Management Council (Council) intends that the allocations to both sectors vary with halibut abundance; hence, its preferred alternative includes a fixed percentage allocation. The initial charter sector allocation would be 17.3 percent of the Area 2C combined commercial and charter catch limit when it is determined by the IPHC to be less than 5 Mlb; the allocation would be 15.1 percent when the combined catch limit is 5 Mlb or more. The initial charter sector allocation would be 15.4 percent of the Area 3A combined catch limit when it is determined by the IPHC to be less than 10 Mlb; the allocation would be 14 percent when the combined catch limit is 10 Mlb or more. The allocations for the lowest tier of combined catch limits used the same formula selected by the Council to set the GHLs. These percentages were the highest charter percentage allocation options that were considered by the Council and would yield the largest projected gross revenue for the charter sector each year. The allocations at higher combined catch limits are the second highest percentage allocation options for each area considered by the Council. The analysis found that these allocations would exceed projected future harvests and that more restrictive management measures would not be required. The Council selected a different percentage of the combined catch limit in each area, because the initial allocations could have very different impacts as a result of the size of the current constant exploitation yield (CEY) relative to historical CEYs. The plan would also identify specific management measures that would be triggered at different combined catch limits and identifies a market-based approach for individual charter LEP holders, who are willing buyers, to increase the charter sector allocation by compensating individual commercial IFQ holders, who are willing sellers, for their transferred quota. The plan would include a prohibition on retention of charter halibut by skippers and crew onboard under all allocations and triggers in both areas.

The preferred alternative was. The analysis was submitted to NMFS in September 2009, resubmitted in August 2010 after additional revisions, and resubmitted again in May 2011 with additional revisions.



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## ABBREVIATIONS

ABC	Allowable Biological Catch	NEPA	National Environmental Policy Act
ADF&G	Alaska Department of Fish and Game	NMFS	National Marine Fisheries Service
ARIMA	Auto-Regressive Integrated Moving Average	NPFMC	North Pacific Fishery Management Council
BAWM	Bycatch and Wastage Mortality	O26	Over 26 inches
BOF	Alaska Board of Fisheries	OFL	Overfishing Level
CCL	Combined Catch Limit	OMB	Office of Management and Budget
CEQ	Council on Environmental Quality	%	Percent
CEY	Constant Exploitation Yield	PSC	Prohibited Species Catch
CFEC	Commercial Fisheries Entry Commission	PSEIS	Programmatic Supplemental Environmental Impact Statement
CFR	Code of federal Regulations	PSR	Pelagic Shelf Rockfish
CI	Confidence Interval	QS	Quota Share
Council	North Pacific Fishery Management Council	RAM	NMFS Restricted Access Management Program
CQE	Community Quota Entity	RFA	Regulatory Flexibility Act
CSP	Catch Sharing Plan	RIR	Regulatory Impact Review
DSR	Demersal Shelf Rockfish	RP	Residual Percentage
EA	Environmental Assessment	SAFE	Stock Assessment and Fishery Evaluation
Ebio	Exploitable Biomass	SBA	United States Small Business Administration
EIS	Environmental Impact Statement	SC	Skipper and Crew
EPA	Environmental Protection Act	SE	Standard Error
ESA	Endangered Species Act	SSC	NPFMC Scientific and Statistical Committee
FCEY	Fishery Constant Exploitation Yield	SUFastD	Slow up fast down
FMP	Fishery Management Plan	SUFulID	Slow up full down
FR	Federal Register	SWHS	Statewide Harvest Survey
GAF	Guided Angler Fish	TAC	Total Allowable Quota
GHL	Guideline Harvest Level	TCEY	Total Constant Exploitation Yield
GOA	Gulf of Alaska	U26	Under 26 inches
GSM	Guided Sport Moratorium	U32	Under 32 inches
IFQ	Individual Fishing Quota	U95%	Upper 95%
IPHC	International Pacific Halibut Commission	USCG	United States Coast Guard
IRFA	Initial Regulatory Flexibility Analysis	USFWS	United States Fish and Wildlife Service
L95%	Lower 95%	WPUE	Weight Per Unit Effort
lb	Pounds		
LEP	Limited Entry Permit		
Mlb	Millions of Pounds		
NEI	Northern Economics, Inc		

## EXECUTIVE SUMMARY

The analysis contained in this document examines three alternatives for managing the charter fisheries and commercial setline fisheries for Pacific halibut in International Pacific Halibut Commission (IPHC) Regulatory Area 2C and Area 3A in the Gulf of Alaska. Alternative 1 is the No Action Alternative and would continue management of the charter halibut sector under the Guideline Harvest Level (GHL) Program. The North Pacific Fishery Management Council (Council) would consider annual changes to the management measures to control charter halibut harvests to the GHL, if a GHL is exceeded. It could take three years to implement revised management measures to reduce charter halibut harvests, so as to not exceed the GHL. Alternative 2 would replace the GHL Program with a catch sharing plan (CSP) for the two areas, under which the Council would set initial allocations of halibut harvests for the charter sector and for the commercial Individual Fishing Quota (IFQ) sector. This plan would allow holders of Charter Halibut Limited Entry Permit, Community Charter Halibut Permits, and Military Charter Halibut Permits (collectively referred to as LEPs throughout this analysis) to lease commercial halibut IFQ, for use by clients on the permit holder's charter vessels, so that the operator's clients may fish under the same halibut size and bag limits as do unguided anglers. Alternative 3 (Preferred Alternative) also would replace the GHL Program and create a CSP that would set initial allocations between the two sectors in each area and allow leasing of commercial setline IFQs to increase the charter sector allocations, and allow charter halibut LEP holders to lease halibut individual fishing quota from commercial quota share holders. By leasing quota, charter LEP holders would be able to increase their seasonal allocations for use by their clients.

The Council intends that the allocations to both sectors vary with halibut abundance; hence it selected a fixed percentage allocation in its preferred alternative. The plan would require pre-season notice of upcoming management measures to allow an uninterrupted charter halibut season. The initial charter sector allocation would be 17.3 percent of the Area 2C combined commercial and charter catch limit when it is determined by the IPHC to be less than 5 Mlb; the allocation would be 15.1 percent when the combined catch limit is 5 Mlb or more. The initial charter sector allocation would be 15.4 percent of the Area 3A combined catch limit when it is determined by the IPHC to be less than 10 Mlb; the allocation would be 14 percent when the combined catch limit is 10 Mlb or more. The allocations for the lowest tier of combined catch limits are based on 125 percent of the 2001–2005 average charter harvest, which was the same formula selected by the Council to set the GHLs (although in fixed pounds). These percentages were the highest percentage allocation options to the charter sector that were considered by the Council and would yield the largest projected gross revenue each year. The allocations at higher combined catch limits are the second highest percentage allocation options for each area considered by the Council. The analysis found that these allocations would exceed projected harvests from 2009 through 2011 and that more restrictive management measures would not be required. The Council selected a different percentage of the combined catch limit in each area because the initial allocations could have very different impacts as a result of the size of the current constant exploitation yield (CEY) relative to historical CEYs. The plan also identifies specific management measures that would be triggered at different combined catch limits and identifies a market-based approach for individual charter LEP holders, who are willing buyers, to increase the charter sector allocation by compensating individual commercial IFQ holders, who are willing sellers, for their transferred quota. The plan would include a prohibition on retention of charter halibut by skippers and crew.

The Council selected its preferred alternative in October 2008. Supplemental analyses of aspects of the preferred alternative were reviewed by the Scientific and Statistical Committee, and accepted by the Council, in February 2009 and incorporated into this analysis. The draft final analysis was submitted to NMFS in September 2009. Recommended revisions from informal reviews by NMFS, and additional revisions of the analyses of the preferred alternative that were requested by the Council, were incorporated into this draft.

## Environmental Assessment

The Environmental Assessment (EA) assesses the potential biological, social, and economic impacts of proposed regulations to (1) set an initial allocation between the charter and commercial halibut sectors with accompanying harvest restrictions to limit charter harvests to the respective allocations in Area 2C and Area 3A; and (2) implement a market-based program for the charter sector to increase its initial allocations through individual transfers of commercial halibut IFQs.

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 action is, first, to create a catch sharing plan that would set an initial allocation between the charter halibut sector and commercial longline halibut sector, and reduce the time lag between occurrence of an overage and a management response; and, second, to allow the charter sector to increase its initial allocation by compensating the commercial sector for any future reallocations above the level set at initial allocation by using a market-based approach. The proposed sector allocations are intended to stop the uncompensated *de facto* reallocation from the commercial sector to the charter sector. The GHL has been exceeded in Area 2C each year since its implementation in 2004, despite restrictive control measures that were recommended by the Council and implemented by NMFS. The GHL was exceeded in Area 3A from 2004 through 2007. Charter halibut harvests have grown at an average annual rate of 6.8 percent in Area 2C and 4.1 percent in Area 3A, from 1998 through 2006. 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, were at their highest levels in the recorded data period of 1998 through 2006 at the time of Council action. The number of clients per trip has increased steadily in recent years. This indicates that client demand for charter services has been met by the charter sector increasing the supply of trips over those years. It is also likely that the recent economic downturn and the one-fish bag limit in Area 2C have decreased demand for charter trips.

### List of Alternatives

#### ***Alternative 1. Status quo***

#### ***Alternative 2. Establish a catch sharing plan that includes sector accountability***

##### **Element 1 – Initial allocation**

Option 1: Fixed percentage<sup>1</sup>

	Area 2C	Area 3A	Based on <sup>2</sup> :
a.	13.1 %	14.0%	125% of the 1995-1999 avg. charter harvest (current GHL formula)
b.	17.3 %	15.4 %	125% of the 2001-2005 avg. charter harvest (GHL formula updated thru 2005)
c.	11.7 %	12.7%	current GHL as percent of 2004 charter harvest
d.	15.1 %	12.7%	2005 charter harvest

<sup>1</sup> Under Option 1, the Council would request that the IPHC set a combined charter and commercial catch limit and apply the catch sharing plan allocations to the two sectors.

<sup>2</sup> Baseline formula for allocation options are provided only for reference as to how the percentages were derived.

Option 2: Fixed pounds<sup>3</sup>

	Area 2C	Area 3A	Based on <sup>2</sup> :
a.	1.43 Mlb	3.65 Mlb	125% of the 1995-1999 avg. charter harvest (current GHL)
b.	1.69 Mlb	4.01 Mlb	125% of the 2000-2004 avg. charter harvest (GHL updated thru 2004)
c.	1.90 Mlb	4.15 Mlb	125% of the 2001-2005 avg. charter harvest (GHL updated thru 2005)

Suboptions under Options 2a, 2b, and 2c:

Stair step up and down. The allocation in each area could be increased or reduced in stepwise increments, based on a change in the total CEY or a change in the combined commercial and charter catch limit. If the halibut stock were to increase (decrease) by 15 percent to 24 percent from its average total CEY for the base period selected for the initial allocation at the time of final action, then the allocation would be increased (decreased) by 15 percent. Likewise, if the stock were to increase (decrease) by 25 percent to 34 percent, then the allocation would be increased (decreased) by an additional 10 percent. If the stock continued to increase (decrease) by at least 10 percent increments, the allocation would be increased (decreased) by commensurate increments.

Sub-option to Suboption under Options 2a, 2b, and 2c:

Stair step provision would be tied to:

- 1) Baseline years as proposed
- 2) CEY:
  - a) 2006 through 2008
  - b) 2008
- 3) Baseline of combined commercial & charter catch limit in:
  - a) 2006 through 2008
  - b) 2008

Option 3: 50 percent fixed/50 percent floating allocation<sup>4</sup>

	Area 2C		Area 3A	
	50 percent of:	and 50 percent of:	50 percent of:	and 50 percent of:
a.	13.1 %	1.43 Mlb	14.1 %	3.65 Mlb
b.	16.4 %	1.69 Mlb	15.9 %	4.01 Mlb
c.	17.3 %	1.90 Mlb	15.4 %	4.15 Mlb

**Element 2 – Annual regulatory cycle.**

The initial charter allocation would be a common harvest pool for all charter limited entry permit holders. It would not close the fishery when the charter allocation is exceeded. Instead, the allocation would be linked to an annual regulatory analysis of management measures (delayed feedback loop) that takes into account the projected CEY for the following year and any overages by the charter industry in the past year(s). This system would work best if there is not a time lag between the overage year and the year of implementation of new regulations. The Council will not systematically revisit or readjust the sector split. An allocation overage would trigger the regulatory process automatically, in contrast with current GHL

<sup>3</sup> Under Option 2, the Council would request that the IPHC use the fixed pound allocation as the number for charter halibut removals from Areas 2C and 3A that is included each year in its “Other Removals” deduction from the Total Constant Exploitation Yield (CEY).

<sup>4</sup> Under Option 3, the Council could select either of two approaches: (1) as stated under footnote 1 or (2) the Council would request that the IPHC deduct the fixed portion of the allocation from “Other Removals” and deduct the floating portion of the allocation from a combined charter and commercial sector fishery catch limit.

management. Any underages would accrue to the benefit of the halibut biomass and would not be reallocated or paid forward.

**Element 3 – Management toolbox**

Tier 1 measures will be used by the Council to try to manage the charter common pool for a season of historical length and a two-fish daily harvest limit. Tier 2 measures will be used if Tier 1 measures are inadequate to constrain harvest by the charter common pool to its allocation. Due to the delayed feedback loop in implementation of management measures, management measures will, in general, be more restrictive, to ensure that the charter sector allocation is not exceeded. In providing predictability and stability for the charter sector, it is likely that charter-allocated fish may be left in the water.

Tier 1	Tier 2
One Trip per Vessel per Day	Annual Catch Limits
No Retention by Skipper and Crew	One-fish bag limit for all or a portion of the Season
Line Limits	Closure for all or a portion of the Season
Second Fish of a Minimum Size	
Second Fish at or below a Specific Length	

**Element 4 – Timeline.<sup>5</sup>**

Element 4 would identify a preferred alternative for the timing of future regulatory actions. It would not be implemented in regulation.

**Element 5 – Supplemental, individual use of commercial IFQ**

Charter limited entry permit holders would be allowed to lease commercial IFQ, in order to provide additional anglers with harvesting opportunities, not to exceed limits in place for unguided anglers.

- A. Leasing commercial IFQ for conversion to Guided Angler Fish (GAF).
  - 1. An LEP (Limited Entry Permit) holder may lease IFQ for conversion to GAF for use on the LEP.
  - 2. Commercial halibut Quota Share (QS) holders may lease up to 1,500 pounds or 10% (whichever is greater) of their annual IFQ to LEP holders (including themselves) for use as GAF on LEPs. A Community Quota Entity (CQE) may lease up to 100% of its annual IFQ for use as GAF on their own LEPs.
  - 3. No more than 200 or 400 fish may be leased per LEP.
    - Suboption: LEPs w/endorsement for more than 6 clients may not lease more than 400 or 600 fish.
- B. LEP holders harvesting GAF, while participating in the charter halibut fishery, are exempt from landing and use restrictions associated with the commercial IFQ fishery, but are subject to the landing and use provisions detailed below.
- C. 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 Alaska Department of Fish and Game (ADF&G). The long-term plan may require further conversion to some other form (e.g., angler days).
- D. Subleasing of GAF would be prohibited.
- E. Conversion of GAF back to commercial sector:

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<sup>5</sup> The Council identified a preliminary preference for a three-year timeline that would include an opportunity for adequate public comment on the analysis, prior to final action.

1. GAF holders may request that NMFS convert unused GAF into IFQ pounds for harvest by the owner of the Quota Share, in compliance with commercial fishing regulations.
2. Unused GAF may revert to pounds of IFQ and be subject to the underage provisions applicable to their underlying commercial QS
  - Option a: automatically on October 1 of each year; or
  - Option b: upon the request of the GAF holder, if such request is made to NMFS in writing prior to October 1 of each year.
- F. Guided angler fish derived from commercial QS may not be used to harvest fish in excess of the non-charter bag limit on any given day.
- G. Charter operators landing GAF on private property (e.g., lodges) and motherships would be required to allow ADF&G samplers/enforcement personnel access to the point of landing.
- H. Commercial and charter fishing may not be conducted from the same vessel on the same day.<sup>6</sup>

#### **Element 6 – Catch accounting system**

1. The current Statewide Harvest Survey and/or logbook data would be used to determine the annual harvest.
2. A catch accounting system will need to be developed for the GAF fish landed in the charter industry.
3. As part of data collection, recommend the collection of length measurements when supplemental IFQs are leased for use and compare to the annual average length to make sure that accurate poundage of removals is accounted for and to allow length measurement information gathered to be used in the formulation of the average weight used in the conversion of IFQs to GAF.

#### ***Alternative 3. (Preferred Alternative) Establish a catch sharing plan that includes sector accountability***

#### **Initial Allocation and Associated Management Measures**

**In Area 2C**, when the combined charter and setline catch limit is less than 5 million pounds, the charter allocation will be 17.3 percent of the combined charter and setline catch limit. When the combined charter and setline catch limit is 5 million pounds and above, the allocation will be 15.1 percent. Management variance not to exceed 3.5 percentage points (plus or minus) may occur around this allocation. The Council's expectation is that the variances will balance over time to ensure that IPHC conservation and management objectives are achieved.

Trigger 1: When the combined charter and setline catch limit is below 5 Milb, the halibut charter fishery will be managed under a one-halibut daily bag limit. The allocation for the charter sector will be 17.3 percent of the combined charter and commercial catch limit. The charter sector's expected catch may vary between 13.8 percent and 20.8 percent. However, if the charter harvest for an upcoming season is projected to exceed 20.8 percent of the combined charter and setline catch limit, then a maximum size limit will be implemented to reduce the projected harvest level to be lower than 17.3 percent of the combined charter and setline catch limit. If the projected charter harvest results in a catch rate (percentage of projected charter harvest divided by the combined commercial and charter catch limit for that Area) that is lower than the lowest charter harvest percentage in that trigger range, then the charter harvest shall be managed under the daily bag limit of the next higher trigger, so long as the projected charter harvest percentage of the combined commercial harvest catch limit falls within the percentage range included under that trigger.

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<sup>6</sup> The analysis assumes that this management measure also implies that charter and subsistence harvests may not be conducted from the same vessel on the same day.

Trigger 2: When the combined charter and setline catch limit is greater than or equal to 5 Mlb and less than 9 Mlb, the halibut charter fishery shall be managed under a one-halibut daily bag limit. The charter sector's allocation will be 15.1 percent of the combined charter and setline catch limit. The charter sector's expected catch may vary between 11.6 percent and 18.6 percent. However, if the charter harvest for an upcoming season is projected to exceed 18.6 percent of the combined charter and setline catch limit, then a maximum size limit will be implemented to reduce the projected harvest level to 15.1 percent of the combined charter and setline catch limit. If the projected charter harvest results in a catch rate (percentage of projected charter harvest divided by the combined commercial and charter catch limit for that Area) that is lower than the lowest charter harvest percentage in that trigger range, then the charter harvest shall be managed under the daily bag limit of the next higher trigger, so long as the projected charter harvest percentage of the combined commercial harvest catch limit falls within the percentage range included under that trigger.

Trigger 3: When the combined charter and setline catch limit is greater than or equal to 9 Mlb and less than 14 Mlb, the halibut charter fishery shall be managed under a two-halibut daily bag limit (only one of which may be longer than 32 inches). The charter sector's allocation will be 15.1 percent of the combined charter and commercial catch limit. The charter sector's expected catch may vary between 11.6 percent and 18.6 percent. However, if the charter harvest for an upcoming season is projected to exceed 18.6 percent of the combined charter and setline catch limit, then the charter fishery will revert back to a 1 halibut daily bag limit. If the projected charter harvest results in a catch rate (percentage of projected charter harvest divided by the combined commercial and charter catch limit for that Area) that is lower than the lowest charter harvest percentage in that trigger range, then the charter harvest shall be managed under the daily bag limit of the next higher trigger, so long as the projected charter harvest percentage of the combined commercial harvest catch limit falls within the percentage range included under that trigger.

Trigger 4: When the combined charter and setline catch limit is greater than or equal to 14 Mlb, the halibut charter fishery will be managed under a two-halibut daily bag limit. The charter sector's allocation will be 15.1 percent of the combined charter and setline catch limit. The charter sector's expected catch may range between 11.6 percent and 18.6 percent. However, if the charter harvest for an upcoming season is projected to exceed 18.6 percent of the combined charter and commercial catch limit, the charter fishery will revert back to a 2 halibut daily bag limit. Only one of the retained halibut may be longer than 32 inches.

**In Area 3A**, when the combined charter and setline catch limit is less than 10 million pounds, the charter allocation will be 15.4 percent of the combined charter and setline catch limit. When the combined charter and setline catch limit is 10 million pounds and above, the allocation will be 14.0 percent. Management variance not to exceed 3.5 percentage points (plus or minus) may occur around this allocation. The Council's expectation is that the variances will balance over time to ensure IPHC conservation and management objectives are achieved.

Trigger 1: When the combined charter and setline catch limit is less than 10 Mlb, the halibut charter fishery will be managed under a one-halibut daily bag limit. The charter sector's allocation will be 15.4 percent of the combined charter and setline catch limit. The charter sector's expected catch may vary between 11.9 percent and 18.9 percent of the combined charter and setline catch. However, if the charter harvest for an upcoming season is projected to exceed 18.9 percent of the combined charter and setline catch limit, then a maximum size limit will be implemented to reduce the projected charter harvest below 15.4 percent of the combined charter and setline harvest. If the projected charter harvest results in a catch rate (percentage of projected charter harvest divided by the combined commercial and charter catch limit for that Area) that is lower than the lowest charter harvest percentage in that trigger range, then the charter harvest shall be managed under the daily bag limit of the next higher trigger, so long as the projected charter harvest percentage of the combined commercial harvest catch limit falls within the percentage range included under that trigger.

Trigger 2: When the combined charter and setline catch limit is greater than or equal to 10 Mlb and less than 20 Mlb, the halibut charter fishery will be managed under a one-halibut daily bag limit. The charter sector's allocation will be 14.0 percent of the combined charter and setline catch limit. The charter sector's expected catch may vary between 10.5 percent and 17.5 percent of the combined charter and setline catch limit. However, if the charter harvest for an upcoming season is projected to exceed 17.5 percent of the combined charter and setline catch limit, then a maximum size limit will be implemented to reduce the projected charter harvest level to 14 percent of the combined charter and setline catch limit. If the projected charter harvest results in a catch rate (percentage of projected charter harvest divided by the combined commercial and charter catch limit for that Area) that is lower than the lowest charter harvest percentage in that trigger range, then the charter harvest shall be managed under the daily bag limit of the next higher trigger, so long as the projected charter harvest percentage of the combined commercial harvest catch limit falls within the percentage range included under that trigger.

Trigger 3: When the combined charter and setline catch limit is less than or equal to 20 Mlb and less than 27 Mlb, the halibut charter fishery will be managed under a two-halibut daily bag limit (only one of which may be longer than 32 inches). The charter sector's allocation will be 14.0 percent of the combined charter and setline catch limit. The charter sector's expected catch may vary between 10.5 percent and 17.5 percent of the combined charter and setline catch limit. However, if the charter harvest for an upcoming season is projected to exceed 17.5 percent of the combined charter and setline catch limit, then the charter fishery will revert back to a one-halibut daily bag limit. If the projected charter harvest results in a catch rate (percentage of projected charter harvest divided by the combined commercial and charter catch limit for that Area) that is lower than the lowest charter harvest percentage in that trigger range, then the charter harvest shall be managed under the daily bag limit of the next higher trigger, so long as the projected charter harvest percentage of the combined commercial harvest catch limit falls within the percentage range included under that trigger.

Trigger 4: When the combined charter and setline catch limit is greater than or equal to 27 Mlb, the halibut charter fishery will be managed under a two-halibut daily bag limit. The charter sector's allocation will be 14.0 percent of the combined charter and setline catch limit. The charter sectors expected harvest may range between 10.5 percent and 17.5 percent of the combined charter and setline catch limits. However, if the charter harvest for an upcoming season is projected to exceed 17.5 percent of the combined charter and setline catch limit, the charter fishery will revert back to a two-halibut daily bag limit. Only one of the retained halibut may be longer than 32 inches.

In Areas 2C and 3A, there is no retention of halibut by skipper and crew while paying clients are on board.

### **Guided Angler Fish**

The catch sharing plans include the supplemental, individual use of commercial IFQ to allow charter limited entry permit holders to lease commercial IFQ, in order to provide additional anglers with harvesting opportunities, not to exceed limits in place for unguided anglers<sup>7</sup>.

#### **A. Leasing commercial IFQ for conversion to Guided Angler Fish (GAF).**

1. An LEP (Limited Entry Permit) holder may lease IFQ for conversion to GAF for use on the LEP.
2. Commercial halibut QS holders may lease up to 1,500 pounds or 10% (whichever is greater) of their annual IFQ to LEP holders (including themselves) for use as GAF on LEPs. If an IFQ holder chooses to lease to a CQE, then the same limitations apply as if they were leasing to an individual charter operator—1,500 lb or 10% whichever is greater—the 100 % has no application here. With regard to CQE leasing: any quota which a CQE holds, regardless of its origin, could be leased up to 100% to eligible residents of the CQE community. For example, a CQE may hold quota share

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<sup>7</sup> While the Council's language says, "not to exceed," the Council intends that charter clients who fish with LEP holders who possess GAF would be allowed to fish under regulations "equal" to those for non-guided anglers.



derived from purchase, lease from another qualified CQE, or leased from an individual, and then lease out up to 100% of the quota it holds.

3. No more than 400 GAF may be assigned to an LEP endorsed for 6 or fewer clients.

Suboption: No more than 600 GAF may be assigned to an LEP endorsed for more than 6 clients.

- B. LEP holders harvesting GAF while participating in the charter halibut fishery are exempt from landing and use restrictions associated with commercial IFQ fishery, but subject to the landing and use provisions detailed below.
- C. 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).
- D. Subleasing of GAF would be prohibited.
- E. Conversion of GAF back to commercial sector.  
Unused GAF may revert back to pounds of IFQ and be subject to the underage provisions applicable to their underlying commercial QS either automatically on November 1 of each year or upon the request of the GAF holder if such request is made to NMFS in writing prior to November 1 of each year.
- F. Guided angler fish derived from commercial QS may not be used to harvest fish in excess of the non-charter bag limit on any given day.
- G. Charter operators landing GAF on private property (e.g., lodges) and motherships<sup>8</sup> would be required to allow ADF&G samplers/enforcement personnel access to the point of landing.
- H. Commercial and charter fishing may not be conducted from the same vessel on the same day.

## Description of Alternatives

**Alternative 1** (No Action) would continue management of the charter sector under the Guideline Harvest Limit (GHL) program and harvest control measures. The status quo allows the charter sector in Areas 2C and 3A to harvest up to (and beyond) the GHLs. The GHL is established annually for Areas 2C and 3A, and may be adjusted downward, based on the total CEY that is determined by the IPHC. Such an adjustment occurred in Area 2C in 2008, when the GHL was reduced from 1.432 Milb to 931,000 lb, and in 2009 when the GHL was reduced to 788,000 lb, where it remained through 2011.

The status quo includes current federal and state regulations that would otherwise remain unchanged. Current federal regulations for Area 2C Pacific halibut charters include (1) a one-fish (of any size) bag limit; (2) a prohibition on the catch and retention of halibut by charter vessel guides, operators, and crew; and (3) a limit on the number of lines used to fish for halibut, which must not exceed six or the number of charter vessel clients onboard the charter vessel, whichever is fewer. Current federal regulations for Area 3A permit a two-fish (of any size) bag limit for Pacific halibut charters. State of Alaska Emergency Order No. 2-R-3-03-09 was issued in 2009 to (1) prohibit the catch and retention of halibut by charter vessel guides, operators, and crew, while paying clients are on board the vessel; and (2) limit the number of lines used to fish for halibut to no more than the number of charter vessel clients onboard. The emergency order was effective from May 23 through September 1, 2009. The State of Alaska did not issue an Emergency Order for the 2010 or 2011 fishing season.

**Alternative 2** contains multiple options, under six primary decision **elements**. It comprises a complex suite of management and regulatory permutations; some are complementary, while others are mutually exclusive. Element 1 (initial allocation), Element 3 (management tool box), and Element 5 (use of

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<sup>8</sup> The Council chose the term "mothership" in this context, referring to floating lodges or support vessels for smaller fishing vessels used to carry clients. It has a different meaning than that used for groundfish fisheries.

commercial IFQs to increase the initial charter allocation) contain the key features of the proposed catch sharing plan. Element 2 (annual regulatory cycle), Element 4 (timeline for action), and Element 6 (required catch accounting system) are procedural.

Alternative 2 would replace the GHL Program and determine a new way to limit charter halibut removals. Under Element 1, allocations to the charter sector would be based on combined catch limits that would be set annually by the IPHC as (a) a percentage; (b) a fixed poundage allocation; or (c) a combination of the two approaches. Element 3 would establish management actions for the charter sector at identified combined charter and setline catch amounts. Under Element 5, charter LEP holders would be allowed to lease commercial halibut IFQ, to increase the charter allocation above the initial charter sector allocation, set by the Council under this action. Commercial halibut IFQ leased for use by the charter sector would be converted from pounds to numbers of fish (using average halibut weight, determined by the ADF&G) and designated as “Guided Angler Fish.” Uncaught GAF would be returned to the commercial sector, as IFQ, using the same conversion factor (See section 2.5.7 and section 2.6). GAF would be harvested under the same bag and size limits that are set for the unguided sport sector.

The Council selected its **Preferred Alternative** (Alternative 3) from the elements and options under Alternative 2, along with innovative approaches that resulted from Council discussion during final action, additional staff research, and public testimony. The preferred alternative would replace the current GHL Program with a target charter initial allocation, based on halibut abundance and a market-based mechanism to increase the charter allocation. It also would establish the management actions for the charter sector at identified levels of halibut abundance, as modified by projections of associated charter halibut removals. The preferred alternative would establish tiers to implement appropriate management measures based on halibut abundance. The preferred alternative would trigger the appropriate bag and size limit management measures based a combined commercial and charter catch limits and would allow for flexibility to move up or down tiers where projected charter harvest indicates the need to tighten or relax management measures for the charter sector. The suite of allocations and bag limit and size limit restrictions at designated triggers are listed below.

<b>Preferred Alternative: Area 2C</b>				
Combined Fishery CEY (million lb)	Allocation	Charter Fishery Bag & Size Limit Regulations		
		If charter harvest within allocation range	If charter harvest projected to exceed allocation range	If charter harvest projected to be below allocation range
Tier 1 <5	Comm alloc = 82.7% Charter alloc = 17.3% Charter range = 13.8-20.8%	One fish	Maximum size limit imposed that brings harvest to <17.3%	One fish
Tier 2 ≥5 - <9	Comm alloc = 84.9% Charter alloc = 15.1% Charter range = 11.6-18.6%	One fish	Maximum size limit imposed that brings harvest to <15.1%	Two fish, but one must be less than 32" in length
Tier 3 ≥9 - <14	Comm alloc = 84.9% Charter alloc = 15.1% Charter range = 11.6-18.6%	Two fish, one must be less than 32" in length	One fish	Two fish
Tier 4 ≥14	Comm alloc = 84.9% Charter alloc = 15.1% Charter range = 11.6-18.6%	Two fish	Two fish, but one must be less than 32" in length	Two fish
<b>Preferred Alternative: Area 3A</b>				
Combined Fishery CEY (million lb)	Allocation	Charter Fishery Bag & Size Limit Regulations		
		If charter harvest within allocation range	If charter harvest projected to exceed allocation range	If charter harvest projected to be below allocation range
Tier 1 <10	Comm alloc = 84.6% Charter alloc = 15.4% Charter range = 11.9-18.9%	One fish	Maximum size limit imposed that brings harvest to <15.4%	One fish
Tier 2 ≥10 but <20	Comm alloc = 86.0% Charter alloc = 14.0% Charter range = 10.5-17.5%	One fish	Maximum size limit imposed that brings harvest to <14.0%	Two fish, but one must be less than 32" in length
Tier 3 ≥20 but <27	Comm alloc = 86.0% Charter alloc = 14.0% Charter range = 10.5-17.5%	Two fish, one must be less than 32" in length	One fish	Two fish
Tier 4 ≥27	Comm alloc = 86.0% Charter alloc = 14.0% Charter range = 10.5-17.5%	Two fish	Two fish, but one must be less than 32" in length	Two fish

Under the plan, the Council would annually request that the IPHC set a combined charter and commercial catch limit. The catch sharing plan would use the combined catch limit, along with projected charter harvests, to determine the daily bag limit and/or size-limit regulations governing charter anglers. The Council intends that the bag limit and/or size limits be implemented under annual IPHC regulations, and not be subject to separate Council action and NMFS rulemaking. Therefore, federal regulations would explicitly describe the management tiers, the resulting management measure(s), and how the management measure was selected. The Council recommended that the annual catch limits for the commercial and charter sectors and the charter harvest restrictions should be determined and implemented by a predictable and standardized methodology as part of the IPHC's annual recommendations for halibut fishery conservation and management. The catch sharing plan regulations would establish procedures for determining the sector catch limits and charter harvest restrictions for each area in order to provide a systematic method for limiting projected charter harvest to the target harvest range determined by the catch sharing plan. The annual catch sharing plan catch limits for the commercial and charter sectors and the charter harvest restrictions would be implemented as IPHC annual management measures. NMFS would include the sector catch limits and catch sharing plan charter harvest restrictions in the IPHC annual management measures published in the *Federal Register* each year, as specified by regulations at 50 CFR 300.62.

The Council recognizes that management measures are imprecise and, therefore, a small variance can be expected to occur around the allocation. Management measures dictated by the plan would result in charter harvests that *average* the target allocation. Charter regulations could vary from year to year, based on abundance as established by the IPHC. The Council's expectation is that the variances will balance, over time, to ensure conservation and management objectives are achieved. The Council's language

implies, however, that its goal for the average error in projected charter harvests should be around zero. *But the Council accepts that charter halibut removals may exceed the sector allocation in some years, and removals may be under the allocations in other years.*

Proposed management measures fall into four tiers for each area. While the daily bag limit and size limit regulations in the third and fourth tiers are specific, the maximum size regulations in the first two tiers were not defined in the preferred alternative, as the Council intends to provide fishery managers with flexibility in times of low halibut abundance, by reducing harvest while having the least effect on the charter industry and its clients. The preferred alternative states that the charter fishery will operate under a one-fish daily bag limit under the first two tiers. If, however, the charter harvest as a percentage of the combined charter and setline catch limit exceeds a specified percentage in either tier, *then a maximum size limit of the one fish would be implemented to reduce the projected harvest level to be lower than x.x% of the combined charter and setline catch limit.* This number (“x.x”) changes with area and tier. In Area 2C, this number is equal to 17.3 percent in Tier 1 and 15.1 percent in Tier 2. In Area 3A, this number is equal to 15.4 percent for Tier 1 and 14.0 percent for Tier 2.

The preferred alternative incorporates new components that previously had not been analyzed. The lack of a specific length in the length limit language in Tiers 1 and 2 raised technical questions with respect to their implementation. A contractor prepared a supplemental analysis on implications of selecting a maximum length limit to manage charter halibut harvest in times of low abundance (King 2009). ADF&G staff prepared a supplemental analysis of the feasibility of projecting charter harvest as proposed under the preferred alternative (Meyer 2009). The Scientific and Statistical Committee (SSC) reviewed the reports and provided its recommendations to the Council in February 2009. The contractor developed an algorithm for annual implementation of a maximum length limit, if indicated as necessary to limit charter halibut harvests to its allocation, which has been incorporated into this draft of the analysis. Additional Council and public guidance on these implementation issues can be provided to NMFS during the public comment period.

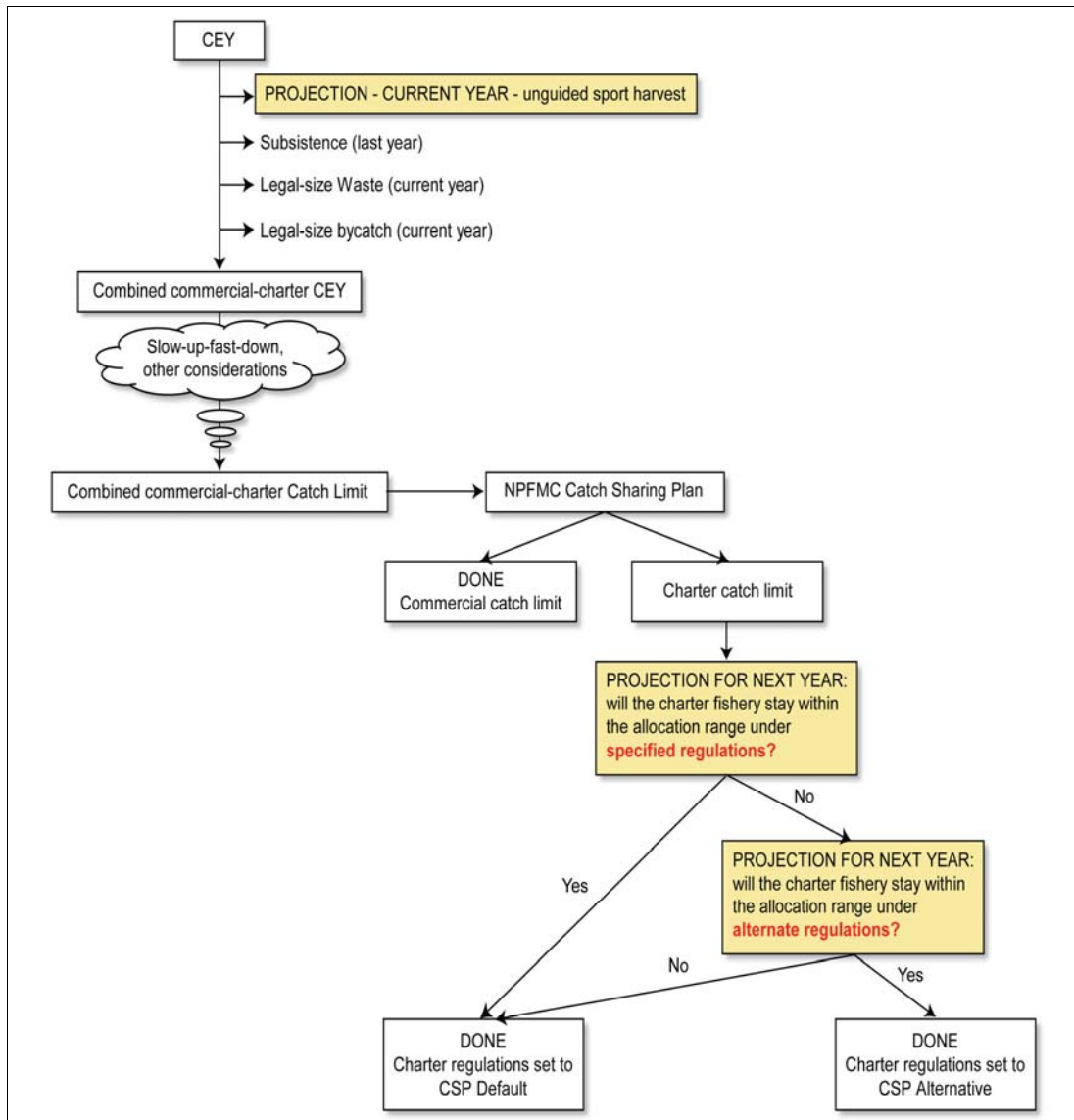
The Council stated that it does not intend to revisit or readjust bag limits in separate actions; such bag limit changes would be triggered automatically by changes in combined charter and setline catch limits, which would be established annually by the IPHC. Bag limits would be implemented under IPHC regulations, based upon its determination of the combined charter and setline catch limits and the bag limit parameters described above.

Element 5 would allow persons holding an LEP to acquire commercial IFQ in order to relax charter angler harvest regulations. A charter LEP holder may lease commercial IFQ.<sup>9</sup> NMFS would transfer the IFQ into Guided Angler Fish (GAF) and allow their clients to fish under regulations implemented for unguided anglers, rather than under those for charter anglers fishing under the charter allocation for the common pool.

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<sup>9</sup> Leased IFQ pounds will be converted to numbers of halibut upon transfer to the charter sector. Charter operators then may allow their clients to harvest the leased halibut to increase their bag limit to that set for unguided anglers.

## Annual regulatory process as proposed under the Preferred Alternative



### Effect of Alternatives

The proposed alternatives address allocation of the Pacific halibut resource between the commercial setline and charter sectors. While the preferred alternative would affect harvest levels and fishing practices of individuals participating in both sectors, total halibut removals would not be affected. The IPHC factors estimated halibut removals into the halibut stock assessment when setting annual commercial longline catch limits. Therefore, none of the proposed alternatives is expected to significantly impact the halibut stock. None is expected to affect the physical environment, benthic community, marine mammals, seabirds, or non-specified groundfish species. The data are insufficient to evaluate whether groundfish stocks may be affected by the preferred alternative. There may be an effect on the human environment, as there are winners and losers under any sector allocation. The Council attempted to mitigate the impacts of the initial allocation on the charter sector by allowing charter limited entry permit holders to acquire additional allocation from the commercial sector, through financial compensation. Charter clients who fish with these permit holders would be allowed to fish under regulations for non-guided anglers.

## Regulatory Impact Review

The economic impacts of the alternatives considered in this analysis are discussed in terms of the status quo, the elements and options under Alternative 2, and Alternative 3 (Preferred Alternative).

### Alternative 1. Status quo

The status quo is defined by the management measures that were in place for past fishing seasons and measures that are currently in place or are expected to be in place in future years. Charter harvests were projected for 2007 through 2011, based on current management measures and historical harvest trends. Those estimates are compared to GHLS that are based on IPHC CEY projections.

Under the GHL Program, NMFS would notify the Council of a GHL overage, in writing within 30 days of being advised of the overage if the charter sector's harvest exceeds the GHL (in year 1), based on a report by ADF&G (in year 2). The Council has identified a suite of management tools that it would consider for implementation, if an overage occurs (in year 2 or 3). An appropriate combination of management measures in a new analysis could be implemented by the Secretary of Commerce to constrain charter harvests (in year 3 or 4).

Area 2C The Area 2C GHL was reduced from 1.432 Mlb to 931,000 lb in 2008 and, subsequently, to 788,000 lb in 2009, where it remained through 2011. Management measures in 2008 included the reduced GHL; the proposed halibut charter limited entry program; a two-fish daily bag limit with a requirement that one of the two halibut be less than or equal to 32 inches; a prohibition on harvesting of halibut by captain and crew; and a line limit that is set equal to the number of clients on the vessel, or six lines, whichever is fewer. NMFS implemented a one-fish bag limit in Area 2C, on May 6, 2009, at 74 FR 21194. The Court refused a request to grant a preliminary injunction to implementation of the one-fish bag limit on June 4, and the one-fish bag limit was implemented on June 5. Client demand for charter trips in Area 2C is assumed to decline as a result of maintaining the one-fish bag limit.

Area 3A The GHL remains unchanged at 3.650 Mlb in Area 3A. The projections assumed that a two-fish daily bag limit (of any size), a prohibition on halibut harvests by skipper and crew, and line limits equal to the number of paying clients aboard the vessel were in place for the entire 2007–2011 time period. The charter LEP was also assumed to be in place in future projection years, but the LEP is not expected to impact the amount of charter harvest. Client demand in Area 3A is assumed not to change as a result of maintaining these management measures.

Projections The projections of halibut CEY used in this analysis were prepared for the Council in 2008. Actual CEYs from 2008 through 2011 in both Area 2C and Area 3A were lower than the projections prepared for this analysis. As a result, the charter halibut allocations calculated from projected CEYs in this analysis for all alternatives considered are likely higher than the charter halibut allocations that would result from updated projections. However, the description of the effects of the options on charter harvest and the charter sector provided in this analysis would also be applicable to lower charter sector allocations.

The projections of charter harvest in this analysis are based on trends that occurred prior to the economic slowdown that has affected the U.S. and broader world economies. Reductions in consumer income and consumer confidence may reduce demand for charter halibut fishing trips more than the models used in this amendment indicate. It is not possible to quantify reductions in demand that may occur as a result of current economic conditions, because client demand data for the years of the economic “slow down” were not available when the analysis was conducted.

Because changing the daily bag limit from two fish to one fish is expected to impact client demand in Area 2C, harvest projections account for that demand change. A projection also was made that assumed no change in client demand. Because of uncertainty in changes in client demand, the two projections were averaged to calculate the point estimates used in this analysis. The harvest projections using the other

demand assumptions are included in the analysis, but for simplicity are not directly compared to the allocation options.

Charter harvest projections were provided for 1995 through 2011 using an autoregressive integrated moving average or “ARIMA” model. Estimates included 95 percent confidence intervals around the harvest point estimates. The reader is cautioned that the standard errors and the resulting 95 percent confidence intervals represent the confidence intervals associated with estimates of the mean harvest estimate. They are not 95 percent confidence intervals for the harvest itself. Therefore the analysis estimates the mean harvest prediction and not a 95 percent confidence interval of harvest itself. For more information see section 2.5.

Halibut CEY and charter halibut harvest projections for 2007 through 2011 are used in this analysis to compare projected charter harvest to various charter allocations (Table ES-1). Comparing the Area 2C harvest projections and the GHL estimates that were provided by the IPHC in 2008 indicates that the charter sector would not stay within its allocation from 2008 through 2011. The GHLS from 2007 through 2011 fall outside of the 95 percent confidence intervals for the projected harvest means estimated for those years. Therefore, implementing a one-fish daily bag limit in Area 2C is expected to allow the charter sector to annually harvest about 250,000 lb more than its GHL over the time period being considered. Stricter management measures would likely be required to keep the charter sector within its GHL. *These projections will be too low, if harvest effort or average weights go up suddenly. These increases will erode the estimated harvest savings of the management measures and harvest could be more similar to the unadjusted projection than the adjusted projection. Conversely, the harvest projections will be too high, when the economy is weaker than it was during the years prior to 2007, resulting in decreases in demand for charter trips below those projected in this forecast.*

Charter harvests in Area 3A are projected to increase every year from 2007 through 2011. It is projected to increase to about 3.5 Mlb. Harvest projections indicate the charter sector would stay within its 3.65 Mlb GHL every year during 2007 through 2011. *This projection assumes that skipper and crew have been reporting their harvest as charter harvests in the Statewide harvest surveys. If this assumption is incorrect, then harvest will be higher by approximately 10 percent and above the GHL.* Based on projections, additional charter harvest restrictions would not be required to keep the fleet within its GHL. However, because the trend indicates the charter harvest is increasing, the charter fleet may exceed its GHL in the future. See Appendix A for a discussion of the unadjusted and adjusted harvest projections and below for figures showing the adjusted and unadjusted projections.

**Table ES-1 Projected charter harvest and GHL under the status quo, 2007–2011.**

Year	Area 2C				Area 3A			
	Projected Harvest (Mlb)	Lower 95% CI (Mlb)	Upper 95% CI (Mlb)	GHL (Mlb)	Projected Harvest (Mlb)	Lower 95% CI (Mlb)	Upper 95% CI (Mlb)	GHL (Mlb)
2007	1.456	1.376	1.536	1.432	3.152	3.003	3.300	3.65
2008	1.496	1.406	1.586	0.931	3.372	3.206	3.539	3.65
2009	1.045	0.944	1.145	0.788	3.482	3.297	3.667	3.65
2010	1.080	0.969	1.191	1.217	3.473	3.270	3.677	3.65
2011	1.126	1.004	1.249	1.432	3.560	3.338	3.782	3.65

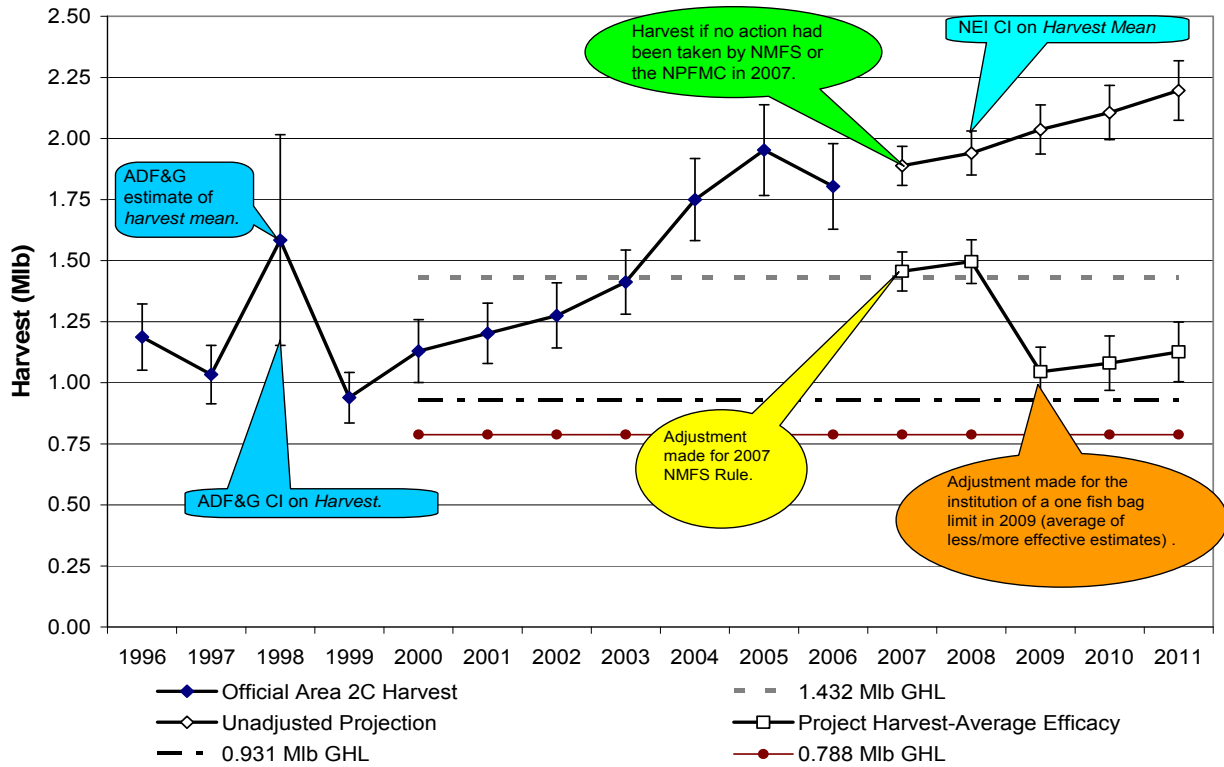
Source: IPHC estimates of GHL and NEI estimates of charter harvest.

Note: ADF&G's final estimate of halibut harvested by charter anglers in 2007 was 1.918 Mlb in Area 2C and 4.002 Mlb in Area 3A. Both of those harvest estimates, released by ADF&G in a letter to the IPHC on November 5, 2008, are substantially larger than the projections used for 2007 in this analysis.

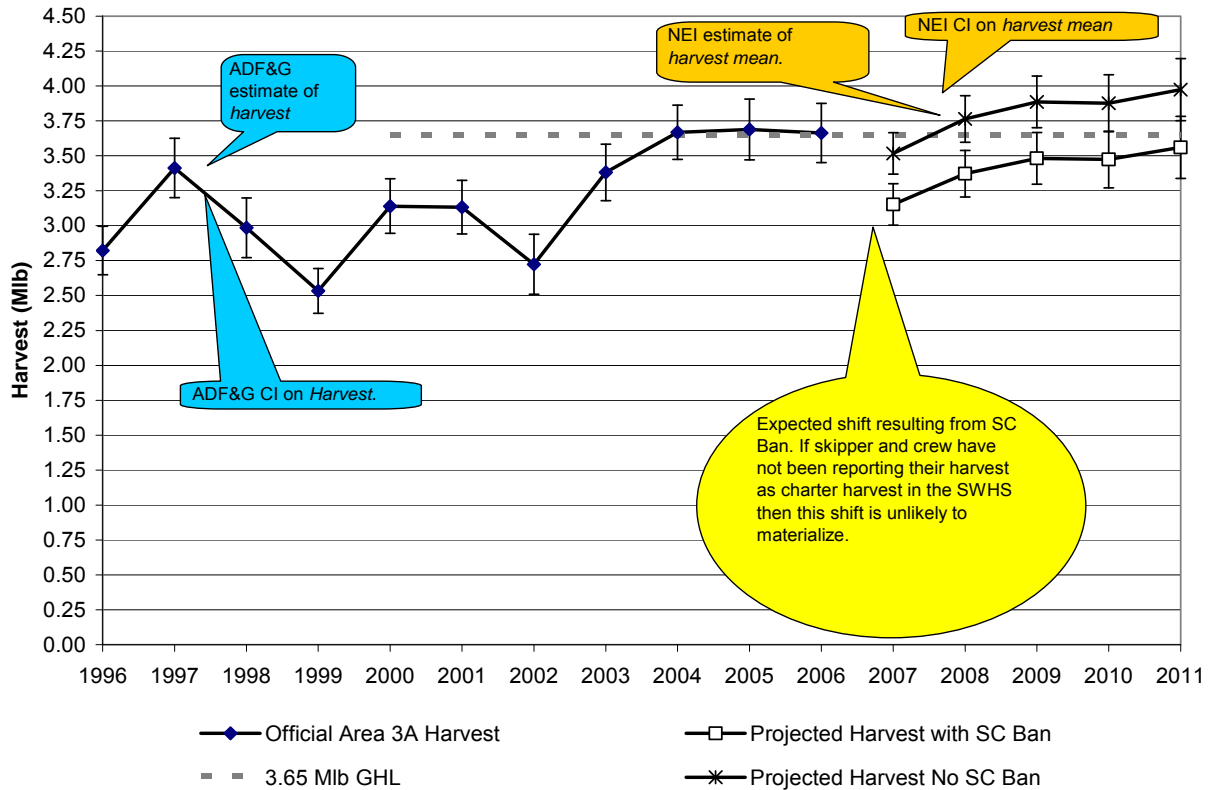
The accuracy of the adjusted harvest projections in each area is subject to certain caveats. Charter harvest in Area 3A depends on whether or not skipper and crew have been reporting their halibut harvest as charter harvest. If they have been reporting it (as assumed in this analysis) then harvest is expected to be generally near or below the GHL. If skippers and crew have not been reporting their harvests while under charter in the SHWS, then no reduction in harvest from the skipper and crew ban on retaining halibut is expected. Under those circumstances actual harvest in Area 3A will more closely match the unadjusted harvest projection, which would exceed the GHL.

If the estimated effect of the 32-inch length restriction on the second halibut, which was instituted in Area 2C in 2007, was eroded by increasing harvest effort or increasing average weights, then overall actual harvest will more closely match the unadjusted harvest projection, which will exceed the GHL in Area 2C (Figure ES-1 and Figure ES-2). Final ADF&G estimates of 2007 harvest confirmed that this did occur.





**Figure ES-1** Past Area 2C harvests compared with model estimates of the mean of future harvests adjusted for actual 2007 management measures continued through 2011.



**Figure ES-2 Past Area 3A harvests compared with model estimates of the mean of future harvests adjusted for a ban on skipper and crew harvest.**

The weak economy is expected to reduce demand for trips to Alaska, halibut charter trips, and charter angler halibut harvests. The magnitude of the decline cannot be projected with information that is currently available. However, the decline in demand is expected to shift the projected harvest line down, so the gap between the 788,000 lb GHL and the projected harvest would be smaller than portrayed in the Area 2C figure. In the Area 3A figure, the reduction in demand is expected to provide more of a buffer between the GHL and the projected harvest.

Harvest projection data for 2008 indicates that the Area 2C charter angler harvest increased by about 80,000 lb from 2007 to 2008 (ADF&G 2009). Total Area 2C charter harvest was about 2.0 Mlb. The increase in pounds harvested is a result of an increase in the average size of halibut harvested, but a reduction in the total number of halibut harvested by charter anglers. The 11 percent increase in the average size of halibut harvested more than offset the reduction in the number of halibut harvested.

In Area 3A, the pounds of halibut harvested by charter clients are projected to have decreased from 4.0 Mlb in 2007, to 3.4 Mlb in 2008. The decline is a result of about 38,000 fewer halibut being harvested. The average size of charter caught halibut increased from 16.9 lb to 17.0 lb. Decreases in the numbers of halibut harvested by clients in both areas seem to indicate that demand for charter trips did decline in 2008.

ADF&G's preliminary estimates for the 2009 season suggest that charter harvests fell from 2008 levels in Area 2C and Area 3A. In Area 2C, which operated under a one-fish bag limit for a full season for the first time, the total number of logbook trips fell 52 percent, while the estimated harvest is 35 percent below the 2008 harvest amount. The estimated harvest reduction is lower than the reduction in the number of trips, because anglers were able to increase the average weight of their fish in all sampling areas, save one. ADF&G is currently estimating a 2009 harvest of 1.244 Mlb in Area 2C. This analysis and prior analyses

have mentioned the fact that anglers may be able to compensate for changes in bag limits by targeting larger fish. This ability is enhanced when anglers face less competition on the water. ADF&G's estimate is within the harvest range estimated by the "Status Quo Less Effective" version of the charter halibut harvest projection model, and roughly ten percent above the range estimated by the mid-range model (see Table 36). Table 35 In Area 3A, which operated under the two-fish bag limit, ADF&G estimates that the number of trips fell by 21 percent from 2008 levels, while harvest fell by a similar percentage to 2.564 Mlb in 2009. Given that Area 3A harvest had been relatively stable for a number of years and operated under the same bag limit in 2008 and 2009, it would seem reasonable to suggest that the more than 20 percent decline in trips and harvest is likely the result of the weak national economy. If this assertion is correct, then it might also be reasonable to suggest that, *ceteris paribus*, roughly two-fifths of the decline in trips in Area 2C was related to the economy and three-fifths of the reduction was related to the change in the bag limit.

## **Alternative 2. Establish a catch sharing plan that includes sector accountability**

### **Element 1 – Initial Allocation**

Element 1 would revise federal regulations to create a catch sharing plan for Pacific halibut between the charter sector and the commercial setline sector in Areas 2C and 3A. Common pool allocations would be set for harvest by charter anglers. Clients of charter LEP holders would be allowed to harvest up to a specified portion of a combined charter and commercial setline catch limit (set by the IPHC each year); the remainder of the combined limit would be allocated to the commercial setline sector. If the charter allocation is exceeded during a year, the fishery would not be closed in-season. Instead, additional management measures would be implemented to constrain harvests to the allocation when an overage occurs or when an overage is projected to occur. A timeline of the period it would take to determine when an overage has occurred, and when new management measures would be implemented under Options 1 through 3, is discussed under Element 2. The CSP would work best if the time lag is minimized between the overage and when constraining management measures are implemented. However, a two or three year lag may occur.

Guided anglers must abide by any possession limits, bag limits, and/or size limits that are in place for the charter sector in an area when harvesting from the common pool. GAF, leased from the commercial sector, may allow charter LEP holders to offer their clients the opportunity to harvest halibut under the same regulations (when more liberal) that apply to unguided anglers. Any such halibut, harvested outside of the charter fishery regulations, must be identified as GAF (or will be subject to an enforcement action). GAF will not be counted against the common pool harvest, because a member of the commercial sector is compensated to allow the charter harvest to increase by reducing their personal allocation. Because the commercial sector is compensated for the halibut, the catch is deducted from the commercial allocation.

The Council considered three methods to determine the size of the common pool allocation to the charter sector. The first method has four allocation options, based on fixed percentages of a combined catch limit. The percentages are determined by using formulas based on historical charter harvest. The second method has three allocation options based on a fixed number of pounds of halibut. A suboption would cause the fixed pounds to vary, in steps associated with predefined changes in the area-specific CEY or combined catch limit. The suboption causes the fixed pound allocation to behave like a percentage based allocation that changes the amount of halibut assigned to the charter sector in predefined steps. The third set of options combines fixed pounds and fixed percentages; it uses half of the result from the fixed pound allocation and half the result of the fixed percentage option for the same base time period.

**Projections** The projections of halibut CEY used in this analysis of Alternative 2 were prepared for the Council in 2008. Actual CEYs from 2008 through 2011 in both Area 2C and Area 3A were lower than the projections prepared for this analysis. As a result, the charter halibut allocations calculated from projected CEYs in this analysis for all alternatives considered are likely higher than the charter halibut allocations that would result from updated projections. However, the description of the effects of the options on

charter harvest and the charter sector provided in this analysis would also be applicable to lower charter sector allocations. The projections of charter harvest in this analysis of Alternative 2 are based on trends that occurred prior to the economic slowdown that has affected the U.S. and broader world economies. Reductions in consumer income and consumer confidence may reduce demand for charter halibut fishing trips more than the models used in this amendment indicate. It is not possible to quantify reductions in demand that may occur as a result of current economic conditions, because client demand data for the years of the economic “slow down” were not available when the analysis was conducted. In summary, updated CEY and charter harvest projections likely would result in reduced charter sector allocations and reduced charter harvest projections from those presented in this analysis.

This analysis compares charter harvest estimates to each charter sector allocation option to identify which allocations would fund the common pool, without the need to impose restrictive management measures. It is important to note that charter harvest estimates were derived using demand projections that were based on historical activity. That activity occurred during years when the general economic conditions were stronger than they have been during the latter part of 2008 and 2009. The weak economy over the past year-plus has resulted in declines in Alaska tourism. Some tourism industry officials<sup>10</sup> have indicated that business in the Alaska tourism industry could be down by as much as 30 percent in 2009. This decline is coming after a year when the tourism industry was flat. The decline in tourism is expected to decrease the demand for charter trips. The impact in Area 2C will depend on whether cruise ship clients take charter trips. The cruise ship sector has indicated that bookings are dramatically lower in 2009. Carnival and Royal Caribbean have reduced the number of ships in Alaska due to reduced demand as a result of the world economy and the \$50 per passenger tax added in 2007.<sup>11</sup> To spur sales, companies have reportedly lowered prices to fill their ships. Some of the deepest discounts are reported to be \$299 for a seven night cruise. This raises the question of how many of the people enticed to take a cruise by the lower price would spend an equal amount of money for a halibut charter fishing trip? That question cannot be answered with available information; however, if the decline in charter demand is proportional to the decrease in projected tourism, the number of trips could decrease by as much as 30 percent in 2009. Declines in demand for charter trips of that magnitude would compound decreases in demand that would occur as a result of changing the daily bag limit from two fish to one fish. Because these changes in the economy have only recently occurred, the data are not available to adjust the models used in this amendment. The reader is cautioned that charter harvests in future years could be overstated, perhaps substantially, by the projections, unless factors that affect demand like consumer confidence, tourism, and disposable income return to levels that occurred prior to 2008.

The anticipated decrease in demand for halibut charter trips means that the difference between the projected harvest and the projected sector allocation is likely overstated in cases where the allocation is too small. When the allocation is projected to exceed harvest, the actual difference may be greater. These impacts should be considered when reviewing future charter harvests projected in this analysis.

Option 1a allocations are calculated using 125 percent of the 1995 through 1999 average charter harvest (current GHL formula). That option results in the charter sector being allocated 13.1 percent of the combined catch limit in Area 2C, and 14.0 percent in Area 3A. IPHC staff has provided estimates of projected commercial and charter catch limits for 2007 through 2011 (Table ES-2). The catch limits incorporate the “slow up, fast down” (SUFastD) methodology that is used by the IPHC.

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<sup>10</sup> [http://www.traveldailynews.com/pages/show\\_page/28670](http://www.traveldailynews.com/pages/show_page/28670)

<sup>11</sup> [http://www.alaskajournal.com/stories/032709/mon\\_img\\_money001.shtml](http://www.alaskajournal.com/stories/032709/mon_img_money001.shtml)

**Table ES-2 Combined commercial and charter catch limit using slow up-fast down.**

<u>Year</u>	<u>2C</u>	<u>3A</u>
2007	10.21	33.00
2008	7.91	27.62
2009	6.81	28.33
2010	6.76	30.29
2011	7.06	33.00

Source: IPHC

The projected poundage allocations that result during 2007 through 2011 are outside of the 95 percent confidence intervals of projected harvest in Area 2C. On average, the charter sector is projected to exceed its allocation by an average of 230,000 lb per year over the five-year period, not accounting for changes in exogenous economic factors. In Area 3A, the allocation is projected to exceed the charter harvest by an average of 886,000 Mlb per year, with the same caveat.

Option 1b (125 percent of the 2001 through 2005 average charter harvest - GHF formula updated through 2005) results in the charter sector being allocated 17.3 percent of the combined catch limit in Area 2C, and 15.4 percent in Area 3A. The Area 2C allocation is projected to exceed charter harvest during 2007. During 2008 through 2011, the charter allocation is projected to fall below the 95 percent confidence intervals for charter harvest. Over the five-year average, the charter sector is projected to be over its allocation by an average of 100,000 lb, *ceteris paribus*. In Area 3A, the charter sector allocation is projected to exceed its harvest every year during 2007 through 2011. *Both of these estimates are subject to the caveats noted above.*

Option 1c (current GHF as percent of 2004) results in the charter sector being allocated 11.7 percent of the combined catch limit in Area 2C, and 12.7 percent, in Area 3A. The Area 2C allocation is projected to be less than the charter sector's harvest each year. Over the five-year period, the charter sector is projected to exceed its allocation by an average of 330,000 lb per year, *ceteris paribus*. In Area 3A, the charter allocation is projected to exceed its harvest each year. They are projected to harvest an average of 460,000 lb less than they would have been allocated during 2007 through 2011, *ceteris paribus*.

Option 1d (2005 charter harvest) would yield an allocation of 15.1 percent of the combined catch limit in Area 2C, and 12.7 percent in Area 3A. The Area 2C allocation is projected to exceed charter harvest during 2007. During 2008 through 2011, the charter allocation is projected to be less than the 95 percent confidence interval for charter harvest. Over the five-year average, the charter sector is projected to be under its allocation – without adjustment - by an average of 70,000 lb. In Area 3A, the charter sector allocation is projected to exceed its allocation every year from 2007 through 2011, *ceteris paribus*. Over that five-year period, the charter sector would be projected to exceed its allocation by 460,000 lb per year, absent accounting for structural changes in the economy. The Area 3A allocation is the same under both Options 1c and 1d.

The allocations under Option 2 would issue the charter sector a fixed number of pounds every year. Option 2a would allocate the Area 2C charter sector 1.43 Mlb per year, and the Area 3A charter sector would be allocated 3.65 Mlb per year. Option 2b would allocate the Area 2C charter sector 1.69 Mlb per year, and the Area 3A charter sector would be allocated 4.01 Mlb per year. Option 2c would allocate the Area 2C charter sector 1.90 Mlb per year, and the Area 3A charter sector would be allocated 4.15 Mlb per year. Allocations of that magnitude are projected to exceed the charter sector's harvest almost every year under Options 2b and 2c, *ceteris paribus*. The allocation under Option 2a is projected to fall within the 95 percent confidence interval for harvest in 2007 and 2008. During the period from 2009 through 2011, the allocation is projected to exceed harvest demand, because of the one-fish bag limit. In Area 2C, the charter sector's allocation is projected to exceed its harvest by an average of 190,000 lb (Option 2a). Its

allocation is expected to exceed its harvest by an average of 450,000 lb (Option 2b), and 660,000 lb (Option 2c) over the 2007 through 2011 time period. In Area 3A, charter allocations are projected to exceed its harvest by an average of 240,000 lb (Option 2a), 600,000 lb (Option 2b), and 740,000 lb (Option 2c), over that same time period, *ceteris paribus*.

A suboption would implement a stair-step up and stair-step down that adjusts the charter allocation when the total CEY or combined catch limit changes a predefined amount. The starting point from which changes are measured is projected to have a substantial impact on future allocations in Area 2C. Allocations based on a stair-step using historical area-wide CEYs will tend to reduce the charter allocation. Allocations based on a stair-step using 2008 coast-wide CEY is projected to increase the allocation over time. Stair-steps that are linked to the 2008 combined catch limit do not trigger a change in the allocation over the time period being considered.

If Option 2a were selected, no changes would occur when the CEY changes by less than 15 percent. Changes greater than 15 percent would trigger adjustments in the charter allocation. The first step changes the initial allocation by 15 percent, in the direction of the CEY or combined catch limit change. Each additional 10 percent change triggers an additional 10 percent change in the charter sector's allocation, again, in the same direction. In Area 2C, the first step is triggered by a 15 percent change in the CEY or combined catch limit, and results in the allocation increasing (decreasing) 210,000 lb. In Area 3A, the allocation is changed by 550,000 lb. Each additional 10 percent increase (decrease) in the CEY results in the charter sector's allocation increasing (decreasing) 140,000 lb in Area 2C, and 360,000 lb in Area 3A.

Because the initial allocation is larger under Option 2b, the changes in the allocation at each step are also larger. In Area 2C, the initial 15 percent increase (or decrease) in the allocation increases (or decreases) the amount by 250,000 lb. Each additional 10 percent increase (or decrease) increases (or decreases) the allocation by 170,000 lb. In Area 3A, the initial change is 600,000 lb, and each additional 10 percent change adjusts the allocation by 400,000 lb.

Since the initial allocation is larger under Option 2c than either of the other two options, the changes in the allocation at each step are also larger. In Area 2C, the initial 15 percent increase (decrease) in the allocation increases (decreases) the amount by 280,000 lb. Each additional 10 percent increase (decrease), increases (decreases) the allocation by 190,000 lb. In Area 3A, the initial change is 620,000 lb, and each additional 10 percent change moves the allocation by 410,000 lb.

Option 3 allocations are based on 50 percent of the percentage allocation and 50 percent of the fixed pound allocation. Because the allocations are based, in part, on fixed pounds, the charter sector allocation has a floor below which the allocation would not decrease, unless resource conservation considerations dictate such a reduction. By design, the allocations under Option 3 always fall between the allocations that would occur using the same years under Options 1 and 2. *When biomass is increasing, however, the allocation is smaller than the percentage based alternatives under Option 1, using the same base period years. A decreasing biomass will result in the allocation being smaller than the fixed poundage allocation, but larger than the percentage based allocation.*

Option 3a (based on 1995 through 1999) results in an Area 2C allocation that is projected to be within the 95 percent confidence interval of 2007, 2010, and 2011 harvests, emphasizing once again that no adjustment for exogenous economic factors have been made. In 2008, the allocation is projected to be less than the charter harvest. The charter allocation is projected to exceed harvest in 2009. Over the five-year period, on average, the charter sector's allocation is projected to be 20,000 lb less than its harvest, *ceteris paribus*. In Area 3A, the allocation is projected to exceed harvest every year. Over the five-year period, on average, the charter sector's allocation is projected to be 560,000 lb over its projected harvest, even without the aforementioned economic recalibration.

Option 3b is based on 2000 through 2004. Because those years were not included as the baseline in an alternative under Option 1, the percentage was calculated for Option 3 using the same formula used in

Options 1a and 1b. Option 3c is based on 2001 through 2005. Both Options 3b and 3c are projected to yield allocations that are larger than the charter sector's projected harvest during 2007 and 2009, through 2012, *ceteris paribus*. In 2008, the charter allocation would be expected to fall within the 95 percent confidence interval for charter harvest. In Area 2C, the charter harvests, on average, are projected to exceed the Option 3b allocation harvest by 220,000 lb, and the Option 3c harvest, by 160,000 lb, again with no adjustment for recent exogenous economic factors. In Area 3A, the allocations, on average, are projected to exceed the Option 3b harvest by 1.02 Mlb, and the Option 3c harvest, by 600,000 lb, *ceteris paribus*.

The Area 2C allocations that would exceed the status quo harvest projections over the five years being considered are Options 1b, 2a, 2b 2c, 3b, and 3c, even absent accounting for the economic changes. The other allocation options are projected to be less than needed, *ceteris paribus*, given the status quo management measures. In Area 3A, all of the allocations are projected to be sufficient to meet projected harvest over the time period considered, without adjustments. However, if the growth trends in halibut charter harvest regain levels seen in the 2000 through 2007 period, the fixed poundage options (Options 2a through 2c) are projected to result in more restrictive management measures.

## **Element 2 – Annual regulatory cycle**

Under Options 1 through 3 in Element 1, managing the charter halibut sector, so as to constrain it to its allocation, would be achieved through an annual (if necessary) regulatory analysis. This management assessment would take into account the projected CEY for the following year and any overages incurred by the charter industry in the past year(s).

The Council wrestled with what has been described as a “delayed feedback loop,” within the context of State of Alaska data availability and federal rulemaking. Three to four years may elapse between the time in which (1) an overage occurs; (2) ADF&G reports that an overage has occurred; (3) the Council selects a preferred alternative to address the overage; and (4) new regulations are in effect.

The Council considered methods that would reduce the time between a charter allocation overage and implementation of regulations to eliminate the overage, under Options 1 through 3 of Element 1. The Council was advised that federal rulemaking requirements could not be streamlined. The management agencies could, perhaps, shorten the time lag by replacing the Statewide Harvest Survey data that is released in September each year with in-season reports from the charter logbook database.

## **Element 3 – Management toolbox**

The Council announced that its policy would be to select a preferred alternative from the list of possible management measures from its ‘toolbox’ in a future action and rulemaking, after it has been notified that a charter sector allocation has been exceeded. The estimated effects of potential management measures are provided only to illustrate how the Council's policy may be implemented in the future. The Council would select the tool (or tools) that allow it to reduce charter harvest to the allocation.

Element 3 would establish two tiers of measures that the Council could use to manage the charter common pool allocation (Table ES-3). Tier 1 measures would be considered to manage for a season of historical length and a two-fish daily harvest limit. Tier 2 measures would be used if Tier 1 measures are inadequate to constrain charter harvest to its allocation (Table ES-4). Due to the inherent delay in implementation of regulations after an overage, the Council cautioned that management measures may be disproportionately restrictive to the estimated level of reduction, to ensure that the charter sector allocation is not exceeded in the future (i.e., punitive). In providing predictability and stability for all those that use this resource, the full charter allocation may not be harvested in every year and/or every area. No regulations would be generated under Element 3.

**Table ES-3 Proposed Management Measures by Tier.**

Tier 1	Tier 2
One Trip per Vessel per Day	Annual Catch Limits
No Retention of Halibut by Skipper and Crew	One-fish bag limit for all or a portion of the Season
Line Limits	Closing the charter fishery for all or a portion of the Season
Second Fish of a Minimum Size	
Second Fish at or below a Specific Length	

**Table ES-4 Estimated Effect of Management Measures**

Tier	Management Measure	Sub-Option	Estimated Harvest Reduction	
			Area 2C	Area 3A <sup>1</sup>
Tier 1	One Trip per Vessel per Day	None	1.8% – 2.4%	5.5% – 6.3%
	No Retention by Skipper and Crew	None	4.3% – 4.7%	10.4%
	Line Limits <sup>2</sup>	None	Not Analyzed	Not Analyzed
	Second Fish of a Minimum Size <sup>3</sup>	45 Inches	18.8% – 27.0%	32.5% – 39.3%
		50 Inches	23.1% – 30.8%	36.9% – 43.3%
	Second Fish at or below a Length Limit <sup>4</sup>	32 Inches	19.7% – 26.1%	18.2% – 24.5%
		34 Inches	Not Analyzed	15.2% – 21.1%
36 Inches		Not Analyzed	12.1% – 18.3%	
Annual Catch Limits	Four Fish	16.4%	6.5%	
	Five Fish	9.3%	4.1%	
	Six Fish	4.3%	2.1%	
Tier 2	One-fish bag limit for All or a Portion of the Season <sup>5</sup>	Full Season	39.7% – 57.8%	47.1% – 62.9%
		May	1.8% – 2.6%	5.0% – 6.6%
		June	10.0% – 14.6%	12.4% – 16.5%
		July	14.5% – 21.1%	17.8% – 23.8%
		August	12.0% – 17.5%	9.9% – 13.2%
		September	1.4% – 2.0%	1.8% – 2.9%
Season Closure <sup>6</sup>	Full Season	100.0%	100.0%	
	May	5.2%	10.5%	
	June	25.7%	26.0%	
	July	35.4%	37.7%	
	August	29.9%	21.2%	
	September	3.7%	4.0%	

1. Numbers for Area 3A reflect the analysis for NPFMC (2007c) updated with ADF&G's final 2006 harvest estimates.

2. Neither NPFMC (2007b) nor NPFMC (2007c) analyzed line limits as an individual option.

3. Upper estimates for each Area include an assumption of a 10 percent reduction in the demand for halibut charter trips.

4. Upper estimate assumes that anglers catch the average fish below the length limit based on biomass. Lower estimate assumes that anglers are able to high-grade by one two-inch size class. These estimates do not account for changes in demand that have occurred since 2006 including those changes resulting from a weak or recessionary national economy.

5. Upper estimates include an assumption of a 30 percent reduction in the demand for halibut charter trips. The analysis did not make any adjustments for anglers rescheduling their trips to other parts of the season which do not include the one-fish bag limit.



6. Estimates based on ADF&G data provided for NPFMC (2007b) and NPFMC (2007c). Estimates do not include the effect of anglers migrating to other months or otherwise adapting to the closure. Source: NPFMC (2007b) and NPFMC (2007c).

#### **Element 4 - Timelines**

Potential timelines for implementing new regulations identified a three- or four-year regulatory cycle. The Council noted that only its analytical timeline was flexible; the schedule for NMFS rulemaking is not.

#### **Element 5 – Supplemental, exclusive use of Guided Angler Fish**

Element 5 would revise commercial halibut IFQ regulations to allow halibut charter LEP holders to annually lease commercial IFQ from commercial QS holders. Such leases would provide charter anglers with additional harvesting opportunities. The LEP holder would request NMFS Restricted Access Management Program (RAM) to convert the leased IFQ into Guided Angler Fish (GAF). When using GAFs, charter angler's harvesting opportunities would be the same daily bag and size limits in place for unguided halibut sport fishing anglers. Guided anglers without access to GAF would operate under the bag and size limits implemented for the charter sector.

The most important implications under Element 5 include the following:

- In Area 3A, the proposed IFQ leasing levels should provide adequate GAF to preserve historical harvest opportunities, and allow charter sector growth in the near future.
- In Area 2C, the proposed IFQ leasing levels may inhibit charter sector growth by 2011, depending on (1) which allocation the Council selects; (2) future growth in the number of charter clients; and (3) halibut biomass in that area.
- IFQ, and consequently GAF, availability will vary with biomass, average weights, and IPHC policy decisions.
- There are no data to suggest what price LEP holders might pay for leasing GAF.
- The element contains GAF-equivalent leasing limits for LEP holders. LEP on vessels with an endorsement for 6 or fewer passengers would be limited to leasing between 200 and 400 GAF per season. The element contains a sub-option whereby LEPs used on vessels with passenger endorsements greater than 6 could lease 600 GAF. The Council considered a range of 400 GAF to 600 GAF. The higher leasing allowances (e.g., 400 GAF, 600 GAF) would preserve historical harvest opportunities under a restrictive management regime, such as a one-fish bag limit. The exception is for approximately 15 percent of the fleet in Area 3A, which has higher than average harvest levels. These vessels would need higher GAF leasing limits under a one-fish bag limit.
- For determining average harvest weights:
  - The current system of calculating average charter harvest weights from the previous year would not be available for IFQ conversion until the end of the following season. For example, the final estimate of average weight for 2007, would not be available until September 2008;
  - If there is a change in the average weight from year to year, it would become apparent the following year that the charter operator paid either too much, or too little for GAF. Since the conversion is a linear function of the average weight, the percentage error in the amount of IFQ converted would equal the percentage difference in the average weights from year to year. These differences would likely cancel out only for charter LEP holders and IFQ holders who convert on a regular basis over an extended number of years, assuming all else is equal;
  - The time lag in estimation of average weight may also affect catch accounting. It is assumed that GAF harvest is tallied as commercial catch, since it is converted from IFQs

(i.e., it will not count against the charter common pool allocation). Because the conversion of IFQ to GAF would likely be based on preliminary estimates of average weight from the previous year, the accurate accounting of GAF removals could not be obtained until the final estimates of harvest are available the following year. The degree to which this accounting error becomes an issue depends on the magnitude of GAF conversions. If conversions are a small proportion of the commercial catch limit, the error may not be worth addressing;

- Perhaps a more important consideration is whether the average weight of the charter harvest (common pool) should be used to convert IFQ for GAF, or whether the average weight of GAF should be used. The average weight of GAF may be higher than the average weight of all charter halibut under certain conditions. In addition, the average weight of GAF would be dependent on the distribution of harvest among subareas of Area 2C or Area 3A. Average weight currently varies quite a bit from port to port. If a high proportion of GAF are harvested from areas with larger fish, this would result in a higher average weight. Alternatively, if GAF are used late in the season, when supplemental halibut are needed to continue operation (i.e., the common pool is depleted), the average size fish may be smaller, due to local depletion caused by removals earlier in the season;
- Under certain conditions, the average weight of GAF may not exceed that of common pool fish. For example, if the charter fishery is restricted by a one-fish bag limit, then common pool fish may have a higher average weight than GAF, due to high-grading. Under a one fish limit, some anglers would try to harvest the largest fish possible.

## **Element 6 – Catch Accounting System**

Element 6 encompasses the record keeping and reporting requirements to implement the Council's preferred alternative. An interagency working group has developed a draft implementation plan for the proposed action<sup>12</sup>.

### **Alternative 3. (Preferred Alternative) Establish a catch sharing plan that includes sector accountability**

The preferred alternative would set initial sector allocations between the commercial setline and charter sectors, implement charter management measures each season in accordance with the sector allocation and halibut abundance, and include a GAF Program to allow charter LEP holders to increase their allocations by allowing them to lease commercial IFQs for use by their clients. Clients would be provided with additional harvesting opportunities by using GAFs, not to exceed limits in place for unguided anglers. Using GAFs, Areas 2C charter clients could harvest 2 halibut per day, while those not using GAFs would be limited to one fish, potentially with a maximum length limit. At the time the analysis was completed in 2008, it was not expected that the charter sector in Area 3A would have an incentive to lease GAF in the near future, because the bag limit was expected to remain at two fish for charter and non-guided anglers. However, updated halibut stock assessment information since 2008 could result in some Area 3A clients and LEP holders using GAF.

Key features distinguish the preferred alternative from Alternative 2. First, the action includes a range around the allocation that acknowledges that procedures for estimating sport harvests are inexact. The range is intended to reflect to some degree the error around sport harvest estimates. Second, the preferred alternative would identify trigger points, based on the combined charter and commercial catch limit that would be implemented annually, through the IPHC annual management measures. This approach eliminates the time lag between the year in which overages/underages occur and the year in which revised

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<sup>12</sup> [http://www.alaskafisheries.noaa.gov/npfmc/current\\_issues/halibut\\_issues/CHIPFinal\\_supp1008.pdf](http://www.alaskafisheries.noaa.gov/npfmc/current_issues/halibut_issues/CHIPFinal_supp1008.pdf)

regulations are implemented that is inherent under Alternative 2. The preferred alternative identifies four trigger points for each area, which are associated with certain baseline bag limits and size limits. The baseline measures outlined in the preferred alternative's tier system could be modified if estimates of charter harvests fall outside the target range of the baseline measure(s). ADF&G would project the next year's harvest using bag limit and size limit restrictions to match the charter sector allocation, based on the IPHC combined catch limit. This method would eliminate the lag between overages and implementation of stricter regulations to limit harvests. Whether estimates of adjustments to angler demand for trips can be made with enough precision to keep the charter angler harvest within their target harvest will be determined in its application. If the projected harvest by charter anglers from the common pool is outside the target harvest range, the harvest restrictions could be modified to the measures identified in the *next* tier prior to the start of fishing that year, so that their projected harvest falls within the target range. This is a significant difference from the options under Alternative 2. Under each of those options, the charter angler regulations would not be modified until an overage/underage had occurred. The time lag to revise regulations was projected to be up to four years after an overage/underage occurred.

The tier system under Element 1 of the preferred alternative may not be sufficiently flexible to address a situation where harvest under the most restrictive regulatory option for some tiers (levels of combined catch limits) is still projected to exceed the desired allocation range. For example, suppose the combined catch limit for Area 3A is 21 Mlb. If the projected harvest under the "default" bag limit of two fish with one fish under 32 inches exceeds the allocation range, the CSP states that the bag limit will be reduced to one fish. However, if fishing effort is so high that the projected harvest under a 1-fish bag limit still exceeds the allocation range, the allocation range will likely be exceeded. Because the preferred alternative states that measures under the *next* tier should be implemented, either the selection of the appropriate measure to restrict the charter harvest within the allocation range may be an iterative process (revised annually until the objective is achieved) or may never occur if the tier system was constructed too conservatively or too liberally to match an allocation range with an appropriate measure. The Council may choose to clarify whether the reference to the "*next* higher trigger" (emphasis added) matches its intent to set management measures to limit projected charter halibut harvests within the allocation range. In above example, the bag limit might be set at one fish with whatever maximum size limit is needed to bring the charter harvest within the allocation range of 10.5%–17.5%.

**Projections** The projections of halibut CEY used in this analysis of Alternative 3 were prepared for the Council in 2008. Actual CEYs from 2008 through 2011 in both Area 2C and Area 3A were lower than the projections prepared for this analysis. As a result, the charter halibut allocations calculated from projected CEYs in this analysis for all alternatives considered are likely higher than the charter halibut allocations that would result from updated projections. However, the description of the effects of the options on charter harvest and the charter sector provided in this analysis would also be applicable to lower charter sector allocations. The projections of charter harvest in this analysis of Alternative 3 are based on trends that occurred prior to the economic slowdown that has affected the U.S. and broader world economies. Reductions in consumer income and consumer confidence may reduce demand for charter halibut fishing trips more than the models used in this amendment indicate. It is not possible to quantify reductions in demand that may occur as a result of current economic conditions, because client demand data for the years of the economic "slow down" were not available when the analysis was conducted. In summary, updated CEY and charter harvest projections likely would result in reduced charter sector allocations and reduced charter harvest projections from those presented in this analysis.

Based on IPHC projections of the combined catch limit through 2015 completed in 2008, it was expected that the Area 2C charter fishery would be operating under Trigger 2 each year. Trigger 2 would allocate the charter sector 15.1 percent of the combined catch limit, impose a one-fish bag limit on the charter clients, and allocate the commercial setline fishermen the remaining 84.9 percent of the combined catch limit. The Area 3A charter fishery was projected to operate under Trigger 4, through 2015. Trigger 4

would allocate the charter sector 14.0 percent of the combined catch limit, the commercial sector 86.0 percent of the combined catch limit, and leave the charter angler halibut bag limit at two fish of any size.

Supplemental, individual use of commercial IFQ would allow charter limited entry permit holders to lease commercial IFQ, in order to provide anglers with additional harvesting opportunities. Eight elements of the GAF Program are listed (A through H) previously under the preferred alternative.

The language in the preferred alternative under Element 5 states that, “With regard to leasing: any quota which a CQE holds . . . could be leased up to 100% to *eligible residents of the CQE community* (emphasis added); however charter LEPs are not restricted to use by residents of CQE communities so if strictly applied, the preferred alternative would be more restrictive than could be implemented. This may have been a misunderstanding by the Council on how the charter LEP was structured, as that program was still under Secretarial Review. If implemented under the adopted language, the GAF Program could be implemented to only be used by a subset of those captains that are in contractual arrangement to use community LEPs that are *also* residents of CQE communities. The Council may wish to clarify its intent on this issue.

### **Economic Impacts of the Alternatives**

For the proposed alternatives, the analysis assumes that the charter sector allocations would be a common pool of fish that clients of charter LEP holders would be allowed to harvest. Bag limits, seasons, and other management measures would be set pre-season to achieve the allocation, and there would be no inseason harvest monitoring (of common pool fish), other than the current logbook program or other monitoring methods required by NMFS. Adjustments to the bag limits and size limits would be made for the next fishing season, so that the common pool allocation would not be exceeded. The leasing of commercial IFQ also would be allowed. Leasing of IFQs allows individual charter LEP holders that hold GAF to use those fish for clients to exceed charter harvest bag and size limits (up to those limits in place for the unguided angler).

Quantitative estimates or confidence intervals for the magnitude of net national benefits under each element and option are unavailable. Determining which allocation would maximize net national benefits would require detailed information on costs and expenditures in both the commercial and charter sectors. In addition to cost information, demand for charter trips and angler willingness-to-pay for trips would also be required. Collecting that information would be expensive and time consuming. Even if these data were available, changes in the halibut biomass will impact the optimal sustainable yield and the optimal allocation of halibut. Because of these ongoing changes to the resource, any allocation that is optimal when it is made (if the Council felt an “optimal” allocation was appropriate) likely would be suboptimal in the future. Leasing IFQ from the commercial sector in the form of GAF could adjust the amount of halibut available to charter clients and benefit both the commercial and charter sector. The benefits of the leasing provision for the charter sector will depend on the bag limits in place for charter and unguided anglers, availability of IFQ for lease, and the market price for those IFQs. The leasing of IFQs would tend to benefit both sectors if IFQs are available, and clients are willing to incur higher costs for a trip to harvest an additional halibut (under a one-fish bag limit, for example). Stakeholders from the commercial and charter sectors have testified in support of the proposed GAF Program, as a market-based mechanism for attaining a more nearly optimal allocation.

Quantitative estimates of regional economic impacts and their distribution, accruing from the proposed alternatives, are also unavailable. Nonetheless, this analysis recognizes and attempts to qualitatively reflect, to the fullest extent practicable, the contributions that commercial fixed-gear halibut fishing and charter halibut fishing make to local and regional economic and social welfare and stability.

### **Charter Sector**

The charter sector is comprised of business operators who are licensed by the State of Alaska to provide charter trips. The alternatives assume that charter operators must hold an LEP to legally operate in the

fishery. It is not presently possible to provide estimates of the charter sector's net revenue. Additional information on both the revenues generated by the charter sector and the costs associated with providing charter services would be needed. There is not a complete set of data on the prices charged for a charter trip in Areas 2C and 3A. General information on trip prices is reported in the RIR, but those prices reflect only a small sampling, drawn from promotional advertising sources. Those samples are not intended to represent the mean trip price in any given area. Information is available from ADF&G saltwater logbooks on the number of trips taken in each area. In 2006, the charter sector took over 92,000 and 138,000 clients fishing in Areas 2C and 3A, respectively. While official figures are not available, average charter prices can range between \$150 and \$300 per person, depending on the type and length of the trip. Using an average price of \$225 per client, the halibut allocation to the charter sector, and average harvest rates per client, the analysis provides a rough estimate of gross revenues, solely from trip fees, of between \$7.4 million and \$17.8 million in Area 2C and \$26.3 and \$38.1 million in Area 3A. These numbers do not account for lodging revenues paid to charter lodge operators or other expenditures (e.g., plane tickets) made by charter clients. Consequently these numbers should not be considered an estimate of the "economic value", direct or indirect, of the charter fleet. Net revenues in the charter sector cannot be provided. Area-wide data are not available for either gross revenues or costs of operating the charter business. Both of these pieces of information are needed to estimate net revenues. The authority, cost, and time required to collect these data exceed those available for this action.

Criddle (2004a, 2006a) described four types of management combinations for a halibut fishery shared by a commercial and charter sector. One combination provided an example of when the commercial fishery was managed under an IFQ-based system and the charter sector was managed under a regulated open access sport fishery. Under the regulated open access system, it is assumed that the charter sector harvests are controlled by some combination of management measures. Criddle concluded that, when a sportfishing charter fleet is comprised of small homogeneous charter businesses (presumably in the absence of significant excess capacity), an increase in demand for trips would result in an increase in trip prices, in the short-run. Long-run effects depend on the types of management measures used to constrain charter harvests. Size limits, bag limits, annual harvest limits, line limits, and prohibition on captain and crew harvests, if some of the fish went to the clients, could reduce the angler or operator surpluses generated from the trips. Seasonal closures, restrictions on where fishing is allowed, or limits on the number of clients, are examples of management measures that could increase the costs of providing trips. It is anticipated that all rents in the charter fleet would be dissipated under the LEP, if the capacity of the fleet does not limit competition for clients. If competition for clients is limited by the number of charter, then it is anticipated that the charter sector could generate rents.

The Council considered adding or removing management restrictions to or from the charter sector when its harvest is from 1 lb to 10 percent above or below its allocation. These benchmarks would provide a black and white definition of when management measures should be modified. However, the accuracy and timeliness of the charter harvest estimates and policy decisions/rulemaking could make modification of the management measures to conform to these benchmarks difficult. Instead, the Council selected a preferred alternative based on triggers and ranges that could be used to set charter angler harvest regulations prior to the start of the fishing year. This system is anticipated to limit the charter and commercial sectors to their respective percentages of the combined catch limit, but recognizes that the charter allocation may be exceeded or under harvested on an annual basis.

If management measures restrict charter harvests to its allocation, increased demand for charter trips would be offset by those more restrictive measures. In this case, increases in demand for charter trips would not be expected to directly impact the commercial sector, unless the shortage of charter seats induced a large increase in "unguided" effort. The commercial sector would be impacted if the charter sector were not constrained to its allocation or if the growth in demand for charter services by the public results in the Council recommending, and the Secretary of Commerce increasing that sector's allocation.

It is also possible the commercial sector could petition the Council in the future to modify the charter allocation (although this is not the Council's intent).

The preferred alternative also would allow charter LEP holders to lease GAF from the commercial sector. It is not possible to predict the quantity of IFQs that would be available for transfer each year. However, both the charter operator and the commercial IFQ holder must be willing parties for IFQs to be leased and converted into GAFs (i.e., the charter operator must pay a sufficient amount for the IFQs to compensate the commercial QS holder for forgone net revenues) (Criddle 2006a).

Charter LEP holders who lease IFQs from the commercial sector would realize increased costs. Those costs would be passed on, in whole or in part, to charter clients, through higher trip prices. The increased costs and prices are expected to allow charter LEP holders to earn normal profits in the long run.

## **Commercial Halibut Fishery**

Impacts of moderate fluctuations in stock abundance would lead to changes in the commercial quota under either a fixed or a percentage based charter allocation. Changes in the amount of halibut harvested by the commercial sector could impact ex-vessel prices, commercial net revenue, and post-harvest surplus. Given research conducted by Herrmann et al. (1999) on the price flexibility of Alaska halibut, the changes in ex-vessel price that result from increasing or decreasing the amount of commercial harvest in Areas 2C and 3A are expected to be very small under the preferred alternative. An allocation to the charter sector that decreases the commercial allocation is expected to result in a small increase in ex-vessel price, but an overall decline in the net revenue of commercial harvesters. Post-harvest surplus is directly related to the quantity of halibut on the market, so a decrease in commercial harvests would lead to a decrease in post-harvest surplus (Criddle 2006b), *ceteris paribus*. If the allocation to the charter sector is set at a level that reduces its harvest during periods when the combined catch limit is steady, the commercial harvest would be increased and post-harvest surplus would increase. Criddle 2006b also provides a summary of how to conduct an analysis that would determine the net benefits to the commercial and charter sector under various allocations. While the analysis provides a description of how the analysis should be conducted, it does not provide a solution to the optimal allocation between the charter and commercial sectors. The data needed to complete that analysis are not available and economic changes that occur would alter the optimal allocation.

Halibut stock fluctuations may impact the asset value of QS held by commercial harvesters. If the changes to halibut stocks in Areas 2C and 3A occur frequently and are relatively small, they are not expected to impact QS values. However, if the stock size is expected to increase or decrease for a longer period of time, it would impact QS asset values. In that situation, a decrease in stock size would reduce QS values and an increase in stock size would increase QS values. Redistributing the amount of halibut that is assigned to the commercial sector could have a similar impact on QS values.

Because commercial QS are expected to generate lower net revenues over the next six years (based on IPHC CEY projections), the asset value of Area 2C QS is also expected to decline.<sup>13</sup> Persons that sell their QS could expect to receive less compensation. Shares would be acquired by "eligible" persons who believe stock abundance will increase over the longer-term. As a result, Area 2C QS holdings could be further concentrated (up to use caps). For QS holders that stay in the fishery, constraints on charter harvest growth would help preserve their portion of the combined catch limit.

The Area 2C commercial allocation is projected to be smaller (during the years considered in this amendment) under the fixed poundage allocations, relative to the percentage based allocations. This is because the projected CEY is smaller during those years, relative to the base years used to determine the allocations. Because the preferred alternative is a percentage based option, it is expected to allocate more halibut to the commercial sector than the fixed poundage options considered.

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<sup>13</sup> If demand for charter trips is greater than the supply in Area 2C, the use of GAF may help stabilize both sectors.

Because the commercial allocations in Area 3A are projected to be at or above historical levels in the near future, the QS values are not expected to change dramatically as a result of near-term declines in net revenue. If the trend of higher than historical average allocations is realized, the QS values may increase.

Increased demand for charter trips does not affect participants in the commercial fishery when expansion of the charter sector is constrained (Criddle 2006b). The proposed harvest restrictions are assumed to constrain the amount of halibut the charter sector can harvest to its heir allocation, so the commercial allocation would not be reduced to accommodate increased charter harvests. It is also important to note that unless there are conservation concerns, charter overages would have a minor impact on future combined catch limits.

The commercial sector, however, would have been directly impacted by a charter allocation that is larger than the charter sector would harvest under the status quo. That scenario would allow the charter sector to increase its harvest, as client demand increases, until it reaches the allocation. From that point forward, the allocation would constrain the charter client harvests and the commercial sector would not be impacted by further increases in charter demand.

If some amount of halibut allocated to charter anglers are unused and is not reassigned to the commercial sector, that excess allocation to the charter sector would reduce the commercial allocation more than is necessary. Forgoing that harvest would reduce post-harvest surplus in that year. There may be off-setting “gains” to be had in the future, as halibut not removed through either charter or commercial fisheries, continue to grow, reproduce, and contribute to the halibut biomass. Determining the net effect of growth and reproductive rates, natural mortality rates, market demand for halibut, charter demand for halibut trips, and the appropriate discount rate(s), among other consideration, exceed current data and analytical capabilities. Nonetheless, these issues counsel care in drawing conclusions about “net benefits”.

Leasing of GAF would allow commercial QS holders to transfer IFQ to the charter sector. Theory suggests that the commercial sector would only be expected to lease IFQ to the charter sector if they receive sufficient compensation to offset the net revenue they would expect to derive from harvesting the fish themselves.<sup>14</sup> Because individual commercial harvesters generate different amounts of net revenue from their allocation, the commercial operations that generate the lowest marginal net revenue would be most likely to lease halibut, all else equal. Charter operations that have the highest net revenue per fish are expected to be the most willing buyers, if their net “benefit” per fish is greater than or equal to the lease cost per fish. It is possible that an operator could “lose” money on a GAF, but would only knowingly do so in order to “benefit” in other than net revenue terms (e.g., “client good will”, advertising “loss leader”, etc.). Leases are only projected to provide additional harvesting opportunities for charter anglers in Area 2C, through 2015, so in the short term the leasing of GAF is not anticipated to have a substantial impact in Area 3A.

## **Charter Clients**

Charter trips hired by clients would not be constrained by the amount of halibut available to its sector in-season under the status quo or the proposed alternatives. However, demand for charter trips could decline under the preferred alternative, as more restrictive management measures are imposed (e.g., a one-fish bag limit in Area 2C) to keep the sector’s harvest within its proposed allocation, or supply of charter trips could be restricted in future seasons as an off-set for overages in the past. Demand for trips could also decline as a result of weak economic conditions. Because excess capacity is expected to continue under

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<sup>14</sup> The implicit assumption here is that anonymous actors in a competitive marketplace make individual, economically rational decisions concerning trade; however, in the real-world, sector conflicts, inter- and intra-community stressors, and personal animosities (alliances) will undoubtedly influence the relative “efficiency” of this market.

the proposed charter LEP, at least in the short term, a charter client would be expected to pay a price for a trip that would allow the “average” charter operator to earn normal profits (NPFMC 2006a).<sup>15</sup>

Status quo regulations are expected to be more restrictive in Area 2C, than in Area 3A. The continuation of current regulations was assumed in both areas (including a one-fish bag limit and possession limit of two daily bag limits in Area 2C). Those management measures are expected to reduce both consumer demand and consumer surplus, relative to regulations in place for Area 3A. Area 3A charter clients would remain under a two-fish bag limit and a possession limit of four fish. The numbers of halibut that may be harvested by a client during the year are not further restricted. Because of the different management measures assumed to be in place for the two areas, clients may choose to take a trip in Area 3A, instead of Area 2C. This behavior would shift demand from Area 2C to Area 3A. If non-residents increase the percentage of trips they take in Area 3A, it may increase overall consumer surplus, relative to what it would be if participation patterns remained static. A variety of attributes associated with Area 2C clientele make a sweeping transfer of demand “unlikely.”<sup>16</sup>

Differential trip pricing would, almost certainly, result if clients wanted to use GAF to relax their harvest restrictions. For example, if a client wanted to harvest two fish of any size in Area 2C, the client may need to compensate the charter operator for the additional cost associated with the lease of the required GAF. It is not possible to know how charter LEP holders would develop price structures for various types of trips. However, the use of GAF would increase trip costs and those costs are expected to be passed on to the client.

The LEP is assumed to not constrain clients booking a charter halibut trip. Competition for clients is expected to keep trip prices at a level that would, on average, allow charter LEP holders to only earn normal profits. All else being equal, the price of trips should not increase as a result of the common pool management measures. Trip prices would increase only for those clients that use GAF to increase the bag limit, if individuals are charged for the use of GAF. Seasonal discounts may continue to be offered, especially in Area 3A, as charter LEP holders attempt to attract clients during the non-peak seasons. Discounted trips have historically been available before mid-June and after mid-August. Discounted trips were widespread in 2009, presumably, owing to the worldwide economic downturn.

## **Halibut Processors**

Halibut processors process both commercial and charter harvest. Processors may generate income from both sources or specialize in one or the other. Commercial halibut processors produce a variety of product forms and sell to a variety of markets. Representatives of the commercial sector have indicated that processors may receive from \$1.35 to \$2.00 per pound for “value added” custom processing of halibut (e.g., filleting, packaging, freezing). The analysis assumed \$1.75 per pound. They also indicated that halibut is important, because it helps to keep product flowing through the plants when other fisheries are closed or deliveries are slow. Without a sufficient supply of halibut, processors may find it difficult to keep plants open as many days as they are currently.

Processors of sport-caught halibut provide a service to sport fishermen. They typically portion, package, and freeze halibut for a fee of \$1.00 to \$1.50 per pound, incoming weight. Halibut is also an important part of their income, especially in areas that have a large sportfishing presence.

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<sup>15</sup> With surplus capacity and declining demand, the marginal operator will see all rents dissipated. Over time, all else equal, these conditions will drive excess capacity out of the sector.

<sup>16</sup> A very substantial portion of those utilizing charter halibut fishing services in Area 2C are passengers aboard cruise ships, traversing the inside-passage. Halibut fishing is one, among many, possible “supplemental activities” they may choose during port-calls (i.e., charter halibut fishing is unlikely their primary purpose for the trip). These “inside-passage” cruises generally do not call on ports in Area 3A, effectively precluding easy transference of charter demand by these individuals during their cruise.



## Consumers of Commercial Halibut

Decreases in the amount of halibut available to consumers would result in increases in halibut prices, all else being equal. As stated earlier, increases in ex-vessel price as a result of decreased supply are expected to be modest, given the price-flexibility of halibut. Even though price increases are expected to be relatively small, the combination of increased prices and reduced availability could decrease post-harvest surplus (Criddle 2006a). The decrease in post-harvest surplus cannot be estimated for the various common pool allocation options. However, the options that generate the smallest charter allocation would result in the largest post-harvest surpluses accruing to consumers of commercially caught halibut, *ceteris paribus*. Alternatively, allowing the charter sector to lease commercial IFQ would, all else being equal, reduce the amount of halibut delivered to the commercial market, thus, reducing consumer surplus accruing to these consumers, if transfers occur. The actual impact on consumers will depend on the amount of halibut in the market from other areas of Alaska and Canada, in addition to the substitution effects of other species.

## Communities

Economic activity resulting from the charter and commercial halibut fisheries generates income for residents of the communities where the economic activity occurs. Employment is also created in communities that provide goods and services to the fishing sectors.

The regional economic impacts under the status quo would likely differ from those under an allocation to the charter sector that imposes additional management constraints in future years. However, changes in regional economic impacts are not reflected in net national benefits.

Under the status quo, ignoring for the present the effects of the recent global economic contraction, the contribution to personal income and employment attributable to the charter sector is expected to increase in Area 3A, in the long-run. In Area 2C, the sector would experience declines in the short-term, as a result of stricter management measures imposed to keep the sector within its GHl (one-fish bag limit). If the CEY increases to higher levels in the future, the charter sector would be expected to increase its contribution to personal income and employment, above the 2009 levels.

No options are being considered that would further limit the harvest of the charter sector within a fishing season, once the season's allocation is established. However, the one-fish bag limit in Area 2C will likely reduce client demand for trips in all Area 2C communities. When the number of trips taken is reduced, the charter sector would need fewer input supplies (e.g., bait, fuel) and it would reduce expenditures within the communities that supply those inputs. When they purchase fewer goods and services within the community, it has a negative impact on that economy, if the reductions are not offset by increased purchases by other sectors (e.g., commercial halibut fishermen).

The allocations considered here would shift the respective amounts of halibut available to the commercial sector and charter sectors. The overall near-term CEY reductions are likely to have a larger impact on the Area 2C regional economies, than shifting the available halibut among sectors. However, shifts in the commercial/charter allocations would impact individuals and/or individual businesses within those communities more intensively than it would the aggregate regional economy, because spending by the two sectors would, to some extent, offset each other. However, because the port-of-origin and the composition of consumable inputs of the two sectors are not precisely equivalent, there will be "winners" and "losers" among and within communities. The attributable reduction in trips, by halibut fishing sector, by community, cannot be estimated, given available data. Information on the expenditures, by halibut fishing sector, by community, is also unavailable.

Rural communities that can take advantage of the more liberal CQE quota leasing provisions could benefit from the preferred alternative. Residents of communities associated with a CQE would have more flexibility in moving halibut from the commercial sector to the charter sector and vice versa. This is

because IFQ held by CQEs are not limited by the 1,500 lb or 10 percent leasing restrictions that are placed upon other entities that hold QS.

### ***Unguided anglers and subsistence harvesters***

Continuation of the status quo is not expected to impose costs or provide additional benefits to unguided anglers, nor to personal-use or subsistence harvesters. Because halibut removals by these groups are deducted from the CEY, prior to determination of the catch limit, the amount of halibut harvested by the commercial and charter sectors does not impact the halibut available to these groups.

Imposing a limit on the amount of halibut that 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, all else being equal. Public comments for this action and prior Council actions pertaining to charter halibut fishing have included concerns about an increase in unguided or “bareboat” rentals. “Bareboat” rental companies provide vessels without crew, for the private uses of their clients. They do supply other equipment required for a successful fishing trip, such as maps, GPS locators, and fishing equipment. Public comment raised both safety and enforcement concerns about the effect of these businesses. The safety concerns focus on inexperienced boaters navigating in Alaska’s challenging marine environment. Enforcement concerns have focused on the suggestion that some businesses would claim that a boat rental is unguided, but then provide a guide who would not identify himself as such, if intercepted by enforcement staff. The NOAA Office of Law Enforcement and the USCG has informed the Council that they do not have concerns under the preferred alternative about boater safety. They will continue to enforce the current regulations regarding boater safety, and those regulations are anticipated to provide adequate protections. If problems do occur in the future, the USCG will bring those issues to the Council’s attention and they can be addressed through the Council process or through USCG regulations.

# 1 ENVIRONMENTAL ASSESSMENT

## 1.1 Introduction

This Environmental Assessment (EA) provides an analysis of alternatives to the status quo, which would implement federal regulations that would replace the Guideline Harvest Level (GHL) Program for Pacific halibut with a catch sharing plan (CSP) for the commercial Individual Fishing Quota (IFQ) and charter sectors. This EA assesses the potential biological, social, and economic impacts of implementing regulations to revise management of the charter halibut fisheries in International Pacific Halibut Commission (IPHC) Regulatory Area 2C and Area 3A. This analysis considers regulatory changes to (1) set a sector allocation between the charter and commercial IFQ fisheries for halibut through a catch sharing plan (CSP) and (2) allow holders of Charter Halibut Limited Entry Permit, Community Charter Halibut Permits, and Military Charter Halibut Permits (collectively referred to as LEPs throughout this analysis) to lease commercial halibut IFQ in order to increase opportunities for harvesting halibut by anglers in the charter sector.

The National Environmental Policy Act (NEPA) requires a description of the purpose and need for the proposed action, as well as a description of alternative actions that may address the problem.

- The purpose and need are addressed in section 1.3;
- Section 1.7 describes the alternatives considered for analysis;
- Section 1.8 describes the affected environment;
- Sections 1.9 and 1.10 discusses the approach taken to evaluate the biological and environmental impacts of the alternatives as required by NEPA, as well as impacts on endangered species and marine mammals;
- Section 2 presents the Regulatory Impact Review (RIR), which describes potential economic impacts from the alternatives;
- Section 3 presents the Initial Regulatory Flexibility Analysis (IRFA), which evaluates the impacts on directly regulated small entities;
- Section 4 contains the references; and
- Section 5 contains the list of preparers.

## 1.2 Background

The IPHC promulgates regulations governing the Pacific halibut (*Hippoglossus stenolepis*) fishery, in compliance with the terms of the Convention between the United States and Canada for the Preservation of the halibut fishery of the North Pacific Ocean and Bering Sea, signed at Washington, D.C., on March 29, 1979. The IPHC promulgates regulations on an annual basis that are approved by the Secretary of State of the United States, 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* to inform persons subject to the regulation.

Additional management 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 Regional Fishery Management Council to allocate harvest privileges among U.S. fishermen. The halibut fishery 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).

Each year, using a combination of harvest data from the commercial, recreational, and subsistence fisheries and information collected during scientific surveys, the IPHC determines the abundance of halibut in each area (the exploitable biomass). The biological target level for total removals in a

regulatory area is the product of a fixed harvest rate and the estimate of exploitable biomass. This is called the “total constant exploitation yield” (Total CEY), and is the target level for total removals (in net pounds) for an area in the coming year. In Area 2C, the IPHC subtracts from the Total CEY estimate the total “non-commercial” removals for the upcoming year. These removals include recreational harvest, subsistence harvest, wastage in the directed halibut commercial fishery, and bycatch mortality occurring in non-halibut commercial fisheries. The portion of the Total CEY remaining after these removals are subtracted is the CEY available for the commercial longline fishery (i.e., the “Fishery CEY”).<sup>17</sup> The actual commercial longline catch limit is set with reference to this Fishery CEY.

With the exception of the charter fishery and a small increase in subsistence harvest, other non-commercial removals are believed to have remained stable in recent years. However, the increase in growth for the charter fishery has resulted in an increase in harvest. As the charter fishery removals increase, its harvests reduce the pounds available for the commercial halibut fishery. The area’s Fishery CEY is allocated between quota share (QS) holders in the Individual Fishing Quota (IFQ) Program. Each QS holder receives a percentage of the total poundage available for commercial harvest within a year. This poundage comprises an individual’s fishing quota.

In 1995, the Council adopted a problem statement recognizing that the increasing amount of harvest in the charter fishery 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. This policy statement led to the development of a guideline harvest level (GHL) policy to address the allocative issues between the commercial and charter sectors.

### **The Guideline Harvest Level**

Since 1993, the Council has discussed the expansion of the charter halibut sector. The issue gained prominence in 1993, when some coastal Alaskan communities, such as Sitka, expressed concerns about local depletion of the halibut resource and the potential reallocation of greater percentage of the Total CEY, from the IFQ fishery, to the charter fishery. In response to these concerns, the Council developed a GHL policy intended to control total removals of halibut in the charter sector. In September 2007, the Council took final action on two management actions affecting the halibut fishery: (1) approval of recordkeeping and reporting requirements for the charter fishery, which were subsequently implemented by Alaska Department of Fish and Game (ADF&G); and (2) recommendation of GHLs for Areas 2C and 3A.

On January 28, 2002, the National Marine Fisheries Service (NMFS) published a proposed rule (67 FR 3867) that specified GHLs, and a system of harvest reduction measures that could be used to maintain the charter halibut harvest in Areas 2C and 3A, at or below the GHLs. The GHLs established an estimated amount of halibut harvest that may be taken annually in the charter fishery for Areas 2C and 3A.

The proposed rule also described management measures that would be implemented by NMFS, to take effect the year following an overage of a GHL. However, the harvest measures as described in the proposed rule could not be implemented. On April 2, 2002, NMFS informed the Council, through a letter, that the measures could not be implemented in the year following a GHL overage, because of the time lag associated with receiving recreational harvest data from ADF&G, and legal requirements for a notice and comment period under the Administrative Procedures Act, including an Environmental Analysis, Regulatory Impact Review, and Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) of the harvest control measure.

The final rule implementing the GHL was promulgated by NMFS on August 8, 2003 (68 FR 47256). The rule removed the problematic harvest control measures, described in the proposed rule, because of the

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<sup>17</sup>The IPHC does not currently account for mortality that results from the release of fish in the sport fishery.

timeline associated with meeting the legal requirements of the Administrative Procedures Act. The final rule established the GHGs as a level of acceptable annual harvests for the 2004 charter halibut fishery in Areas 2C and 3A. The 2004 GHGs were 1,432,000 lb net weight in Area 2C, and 3,650,000 lb net weight in Area 3A. Charter harvest exceeded the GHG in Area 2C from 2004 through 2009. Charter harvest exceeded the GHG in Area 3A from 2004 through 2007. Preliminary harvest estimates for the 2010 charter fishing season indicate the GHG was exceeded by 62 percent (491,000 lb) in Area 2C; charter harvests in Area 3A were under the GHG by 18 percent (658,000 lb).

Growth of charter halibut harvest is effectively unrestricted, because the GHG is not a “hard” cap. The commercial allocation is a hard cap, calculated after deducting estimates of other removals, including charter harvest. Therefore, as the charter fishery expands, its harvests reduce the allocation to the commercial halibut fishery, meaning the amount of IFQ available for harvest is reduced.

While commercial quotas fluctuate directly with stock abundance, the fixed GHGs 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 five GHG levels in relation to halibut stock abundance (total CEY). The GHGs are reduced if the area-specific total CEY declines by at least 15 percent below the average 1999-2000 total CEY, as determined by the IPHC. For example, if the total CEY in Area 2C was to fall by between 15 percent and 24 percent below its 1999–2000 average, then the GHG would be reduced from 1,432,000 lb to 1,217,000 lb. If the total CEY declined by between 25 percent and 34 percent, then the GHG would be reduced from 1,432,000 lb to 1,074,000 lb. If the total CEY continued to decline by at least 10 percent, the GHG would be reduced from 1,074,000 lb by an additional 10 percent to 931,000 lb. If the total CEY declined by an additional 10 percent or more, the GHG would be reduced by an additional 10 percent from 931,000 lb to the baseline level of 788,000 lb. The Area 2C GHG would not be reduced below 788,000 lb. If the area halibut biomass increased, the GHG could be increased only to its initial level of 1,432,000 lb, but no higher.

The initial GHG formula was calculated as estimated charter harvests in pounds from 1995-1999 plus 25 percent of estimated charter harvests in pounds from 1995-1999 to allow for some growth in charter harvest under the GHG. The charter sector requested that a fixed poundage 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 historical length, using area-specific measures to control harvests to the GHG. The GHG in Area 3A has never been reduced. The Area 2C GHG was reduced in 2008, to 931,000 lb, as charter halibut harvests in Area 2C have continued to grow.<sup>18</sup> The Area 2C GHG was reduced in 2009 to 788,000 lb and the GHG remained at 788,000 lb through 2011. The Area 2C GHG was exceeded for the first time in 2004, its first year of implementation, and has been exceeded in each successive year (Table 5).

While the charter halibut fishery in Area 3A was at or slightly above its GHG (except for a 10 percent GHG overage in 2007) from 2004 through 2008, the Area 2C fishery clearly exceeded its GHG in recent years. A management response to the excess halibut harvests in Area 2C was initiated in 2006 by the Council, and subsequently by the IPHC, NMFS, ADF&G. At its annual meeting in January 2007, the IPHC adopted a motion to recommend reducing the daily bag limit for clients on charter vessels in Areas 2C and 3A from two halibut to one halibut during certain time periods. Specifically, for Area 2C, the IPHC recommended that the one-fish daily bag limit should apply to charter vessel anglers from June 15 through July 30. The IPHC recommended this temporary bag limit reduction because it believed its management goals were at risk by the magnitude of the charter halibut harvest in excess of the GHG, especially in Area 2C. This action was not explicitly designed to manage the charter fishery to the GHGs but rather to initiate some control on what appeared to be a constantly increasing charter vessel harvest.

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<sup>18</sup> <http://www.alaskafisheries.noaa.gov/notice/73fr6709.pdf>.

**Table 5 Area 2C and 3A charter catch of Pacific halibut (all pounds are net weight).**

Area 2C				
Year	Guided (Mlb)	Harvest	Guided (percent of GHL)	Harvest
1995	0.986		69	
1996	1.187		83	
1997	1.034		72	
1998	1.584		111	
1999	0.939		66	
2000	1.132		79	
2001	1.202		84	
2002	1.275		89	
2003	1.412		99	
2004	1.750		122	
2005	1.952		136	
2006	1.804		126	
2007	1.918		134	
2008	1.999		215	
2009	1.245		158	
Area 3A				
Year	Guided (Mlb)	Harvest	Guided (percent of GHL)	Harvest
1995	2.845		78	
1996	2.822		77	
1997	3.413		94	
1998	2.985		82	
1999	2.533		69	
2000	3.140		86	
2001	3.132		86	
2002	2.724		75	
2003	3.382		93	
2004	3.668		100	
2005	3.689		101	
2006	3.664		100	
2007	4.002		110	
2008	3.378		93	
2009	2.734		75	

In a letter to the IPHC on March 1, 2007, the Secretary of State, with concurrence from the Secretary of Commerce, rejected the recommended one-fish daily bag limit in Areas 2C and 3A and indicated that appropriate reduction in the charter vessel harvest in these areas would be achieved by a combination of ADF&G and NMFS regulatory actions. For Area 2C, the State of Alaska Commissioner of Fish and Game (State Commissioner) issued an emergency order to prohibit retention of fish by charter vessel guides and crew members (No. 1-R-02-07). This emergency order was similar to one issued for 2006. This action was intended, in conjunction with other measures, to reduce the 2007 charter vessel harvest of halibut to levels comparable to the IPHC-recommended bag limit reduction, which was estimated to range from 397,000 lb to 432,000 lb.

In June 2007, the Secretary of Commerce, through NMFS, developed regulations independent of the Council process to reduce charter Area 2C charter harvest to a level comparable to the level that would have been achieved by the one-fish daily bag limit recommended by the IPHC. The preferred alternative selected by NMFS maintained the traditional two-fish daily bag limit provided that at least one of the

harvested halibut has a head-on length of no more than 32 inches. If a charter vessel angler retained only one halibut in a calendar day, that fish may be of any length. NMFS published regulations implementing this partial maximum size limit on June 4, 2007 (72 FR 30714).

The Council also was considering management alternatives for the charter vessel halibut fishery in Area 2C during the first half of 2007. Unlike the IPHC, ADF&G, and NMFS actions, however, the alternatives were designed specifically to maintain the charter vessel fishery to its GHL. In June 2007, the Council adopted a preferred alternative that contained two options. The Council recommended that the selection between the options depend on whether the CEY decreased substantially for 2008. As explained above, the GHLS for Area 2C and 3A are linked to the CEY determined annually by the IPHC as a basis for setting the commercial fishery catch limits in these areas. A substantial decrease in the CEY could cause the GHL for Area 2C to decrease from its previous 1.432 million lb (649.5 mt) level. Not knowing in June 2007 how the GHL may be affected by IPHC action in January 2008, the Council recommended a suite of charter vessel fishery restrictions if the GHL in Area 2C remained the same in 2008 (Option A) and a different, more restrictive, suite of restrictions if the GHL decreased in 2008 (Option B). The Council recommended no change in management of the charter vessel fishery in Area 3A because that fishery appeared stable at about its GHL. A proposed rule was published December 31, 2007 (72 FR 74257), soliciting comments on both options for management of the charter vessel fishery in Area 2C.

At its annual meeting in January 2008, the IPHC set the 2008 total CEY for Area 2C at 6.5 Milb. This was a 4.3 Milb reduction from the 2007 total CEY of 10.8 Milb which triggered a reduction in the Area 2C GHL to 931,000 lb. This reduction in the GHL compelled selection of the more restrictive Option B for the Area 2C final rule. Option B imposed a daily bag limit of one halibut for each charter vessel angler, prevented charter vessel guides, operators and crew from harvesting halibut, restricted the number of lines used to fish for halibut on a charter vessel, and added certain recordkeeping and reporting requirements. These regulations were published in the Area 2C final rule on May 28, 2008 (73 FR 30504), and effective on June 1, 2008.

On June 2, 2008, the Option B regulations were challenged in U.S. District Court for the District of Columbia by eleven plaintiffs requesting a temporary restraining order and preliminary injunction on implementing the regulations, particularly the one-halibut daily bag limit. On June 10, 2008, the court granted the plaintiff's request for a temporary restraining order concluding that plaintiffs demonstrated a likelihood of success on the merits of their claims and enjoined NMFS from enforcing the one-halibut daily bag limit. Instead, the court ordered that the previous (2007) rule become effective which allowed a two-fish daily bag limit provided that at least one of the harvested halibut has a head-on length of no more than 32 inches (81.3 cm). On June 19, the court granted plaintiffs a preliminary injunction which continued the effect of the temporary restraining order.

The court's decision was based largely on the argument that the one-fish bag limit was designed to achieve the reduced 2008 GHL in Area 2C and NMFS could not know in June 2008 whether this GHL was exceeded. This would not be known until ADF&G produced its final estimate of the 2008 sport fishing harvest in October of 2009. Hence, the plaintiffs argued, and the court agreed, that NMFS had violated its 2003 GHL rule by acting to impose restrictions before knowing that the new GHL was exceeded.

NMFS subsequently withdrew the May 28, 2008, rule that was the basis for the legal challenge, and on December 22, 2008, proposed a separate rulemaking to implement the one fish daily bag limit (73 FR 78276). NMFS proposed the one halibut daily bag limit in Area 2C to give effect to the Council's intent to keep the harvest of charter vessel anglers as close to the established GHL as the Council's proposed management measures will allow. The final rule implementing this action (74 FR 21194, May 6, 2009) was effective on June 5, 2009.

On June 25, 2009, the U.S. District Court for the District of Columbia denied a request for a preliminary injunction to prevent implementation of the May 6, 2009, rule (Van Valin v. Locke, Civil Action No.

1:09-cv-961). On November 23, 2009, the U.S. District Court for the District of Columbia granted summary judgment in favor of the Secretary and upheld the May 6, 2009, final rule. The one halibut per day bag limit for charter vessel anglers remains in effect for Area 2C.

The Area 2C charter harvest has exceeded its GHL every year since 2004 notwithstanding the previously described management measures designed to control sport halibut harvest in this area. During 2004 through 2007, the GHL was 1,432,000 lb (649.5 mt). During that time period, charter harvests were approximately 1,750,000 lb (793.8 mt) in 2004, 1,952,000 lb (885.4 mt) in 2005, 1,804,000 lb (818.3 mt) in 2006, and 1,918,000 lb (869.9 mt) in 2007. In 2008, the GHL was 931,000 lb (422.3 mt) and charter harvests was approximately 1,999,000 lb (906.7 mt). In 2009 the GHL was 788,000 lb (357.4 mt) and the charter harvest was approximately 1,245,000 lb (564.7 mt). In 2010, the GHL was 788,000 lb (357.4 mt). The Alaska Department of Fish and Game (ADF&G) provided the IPHC with a preliminary estimate of the charter harvest in 2010 of 46,816 fish yielding 1,279,000 lb (580.1 mt) (November 1, 2010, letter from ADF&G to the IPHC).

The Total CEY for 2011 is 5,390,000 lb (2,444.9 mt) in Area 2C. The corresponding GHL is 788,000 lb (357.4 mt) in Area 2C. Because NMFS imposed no additional charter restrictions in 2011, the IPHC believed that charter harvest was likely to exceed the GHL and result in total harvest exceeding the total CEY. As such, the IPHC recommended and the Secretary adopted a daily bag limit for charter vessel anglers in Area 2C of one halibut with a maximum length of 37 inches per day (76 FR 14300, March 16, 2011). The IPHC recommended this additional management measure in the Area 2C charter fishery to limit charter halibut harvest to the GHL and achieve the IPHC's overall conservation objective for Area 2C.

This brief history of the management of the charter halibut fishery demonstrates its contentiousness. Charter vessel operators and anglers generally resist anything more restrictive than the traditional two-fish daily bag limit, but the GHL management program in the charter sector has allowed charter halibut harvests to exceed the GHL since its implementation in Area 2C and in some years in Area 3A. The IPHC balances such charter harvest overages by decreases in the commercial halibut catch limit. To assure the future productivity of the halibut resource, the IPHC must maintain the total halibut harvest within the total CEY. Pursuant to the Halibut Act, the Council has a duty to ensure that any allocation of fishing privileges among various U.S. fishermen is fair and equitable.

### **1.3 Purpose and Need**

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 need for reliable harvest data would increase as the magnitude of harvest expands in the charter sector. The Council identified the following areas of concern, with respect to the recent growth of halibut charter operations.

- The recent growth of charter operations may be contributing to overcrowding of productive grounds and declining harvests per unit of effort for historical sport, commercial, and subsistence fishermen in some areas.
- As there is currently no limit on the annual harvest of halibut in the charter fishery, an open-ended reallocation from the commercial IFQ sector to the charter industry occurs when charter harvest exceeds the GHL. 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.
- In some areas, community stability may be affected as traditional sport, subsistence, and commercial IFQ fishermen are displaced by charter LEP holders. The uncertainty associated with



the present situation and the conflicts that are occurring between the various user groups may also be impacting community welfare.

- 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 Council adopted the following management objectives for this proposed action in December 2007.

*In establishing this catch sharing plan for the commercial and sport charter halibut sectors, the Council intends to create a management regime that provides separate accountability for each sector. The management of the commercial sector remains unchanged under the plan, and new management measures are provided for the sport charter sector.*

*These new measures for the sport charter sector are designed to address the specific need of the sport charter sector for advance notice and predictability with respect to the management tools and length of season that will be used to achieve the allocation allotted to that sector under the plan. In order to achieve the allocation, it is the Council's intent that management tools and season length would be established during the year prior to the year in which they would take effect, and that the tools selected and season length would not be changed in season.*

*The Council will evaluate its success in achieving the sport charter sector allocation, and specific needs for predictability, advance notice, and season length each year, and will adjust its management tools as needed. In designing this regime for the sport charter sector the Council recognizes that providing advance notice and predictability may result in a charter harvest that does not precisely meet the sector allocation for that particular year. Therefore, the Council intends to adjust its management measures as needed to ensure that the sport charter sector is held at or below its allocation, recognizing that there may be annual overages or underages, so long as such overages or underages do not exceed [0, 5, or 10 percent<sup>19</sup>] of the charter sector allocations. In meeting its conservation mandate while accommodating the charter industry's need for predictability and stability, the Council will necessarily err on the side of conservation in the selection of management tools and season length, with the result that the sport charter sector may not be able to harvest its entire allocation.*

The Council adopted the following Problem Statement in June 2007, and reaffirmed the language in October 2007, December 2007, and April 2008.

*The absence of a hard allocation between the longline and the charter halibut sectors has resulted in conflicts between sectors and tensions in coastal communities 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 Council adopted its preferred alternative for a catch sharing plan for Area 2C and Area 3A in October 2008; upon its implementation the plan would replace the GHF Program. Additional analyses of certain features of the preferred alternative were conducted in 2009. NMFS provided informal technical and economic reviews of the draft EA/RIR/IRFA in 2009. The EA/RIR/IRFA was revised and resubmitted to NMFS in 2010 in response to those review comments and other consultations with NMFS staff. The EA/RIR/IRFA was revised and resubmitted to NMFS again in May 2011 with additional revisions.

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<sup>19</sup> The Council did not include its December 2007 overage/underage policy in its preferred alternative. Instead, it allowed a management variance not to exceed 3.5 percent (plus or minus) around the charter sector allocations.

## 1.4 Action Area

The action considered in the analysis would occur in IPHC regulatory Area 2C and Area 3A (Figure 3).

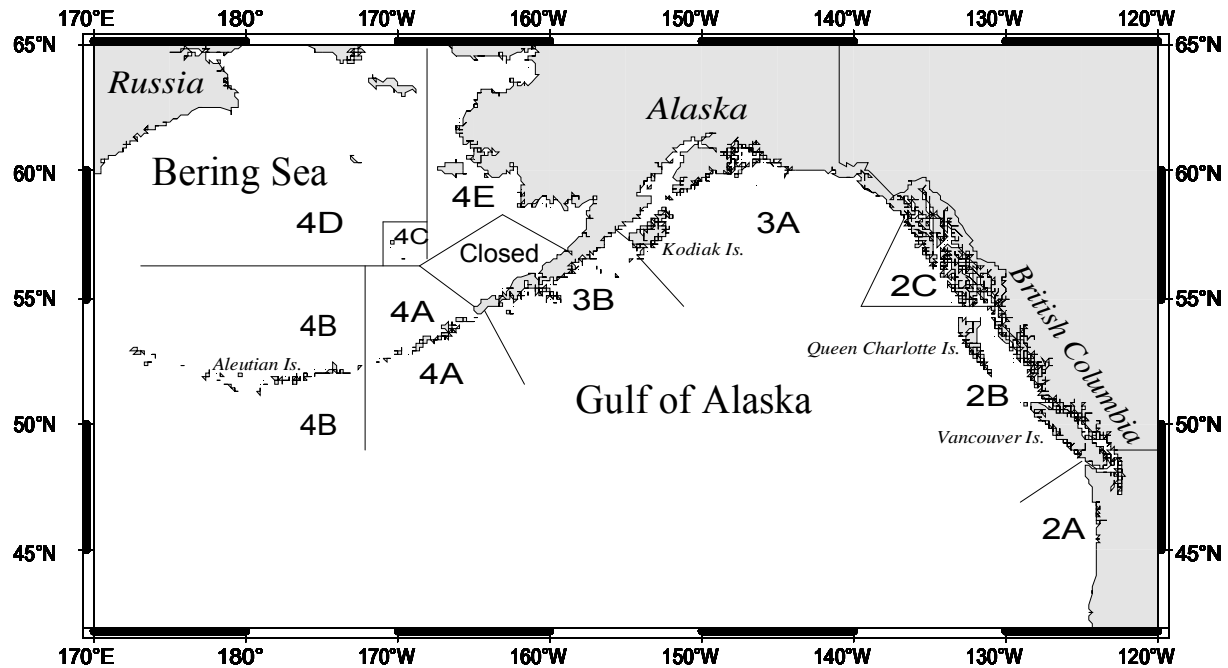


Figure 3 IPHC regulatory areas.

## 1.5 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;
- Executive Order 12866 (as amended); and
- Information Quality Act.

## 1.6 Related NEPA Documents

The NEPA documents listed below have detailed information on the halibut fishery, 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) (NMFS 2004);

- Essential Fish Habitat Environmental Impact Statement (EIS) (NMFS 2005b);
- The Harvest Specifications Environmental Impact Statement (EIS)(NMFS 2007);
- Guideline Harvest Level Environmental Assessment (EA) (NPFMC 2003a);
- EA for a regulatory amendment to implement Guideline Harvest Level measures in Area 2C (NPFMC 2007b); and
- EA for a regulatory amendment to define subsistence halibut fishing in Convention Waters (NPFMC 2003b).

## 1.7 Description of the Alternatives

The National Environmental Policy Act (NEPA) requires that EAs consider a range of reasonable alternatives. While this analysis considers three formal alternatives, Alternative 2 contains multiple “options,” as well as a series of six primary decision “elements.” Therefore, it comprises a complex suite of management and regulatory configurations, some complementary, others mutually exclusive. Alternative 3 (Preferred Alternative) was selected in October 2008.

### ***Alternative 1. No action***

### ***Alternative 2. Establish a catch sharing plan that includes sector accountability***

#### **Element 1 – Initial allocation**

Option 1: Fixed percentage<sup>20</sup>

	<b>Area 2C</b>	<b>Area 3A</b>	<b>Based on<sup>21</sup>:</b>
a.	13.1 %	14.0%	125% of the 1995-1999 avg. charter harvest (current GHF formula)
b.	17.3 %	15.4 %	125% of the 2001-2005 avg. charter harvest (GHF formula updated thru 2005)
c.	11.7 %	12.7%	current GHF as percent of 2004 charter harvest
d.	15.1 %	12.7%	2005 charter harvest

Option 2: Fixed pounds<sup>22</sup>

	<b>Area 2C</b>	<b>Area 3A</b>	<b>Based on<sup>21</sup>:</b>
a.	1.43 Milb	3.65 Milb	125% of the 1995-1999 avg. charter harvest (current GHF)
b.	1.69 Milb	4.01 Milb	125% of the 2000-2004 avg. charter harvest (GHF updated thru 2004)
c.	1.90 Milb	4.15 Milb	125% of the 2001-2005 avg. charter harvest (GHF updated thru 2005)

Suboption to Options 2a, 2b, and 2c:

Stair step up and down. The fixed poundage allocation in each area (e.g., Option 2a - 13.1% in Area 2C) could be increased or reduced in stepwise increments based on a change in the total CEY or a change in the combined commercial and charter catch limit. If the halibut stock were to increase or decrease by 15 percent to 24 percent from its average total CEY during the base period selected for the initial allocation at the time of final action (e.g., 1995-1999 for Option 2a), then the allocation would be increased or decreased by 15 percent from the base allocation. For

<sup>20</sup> Under Option 1, the Council would request that the IPHC set a combined charter and commercial catch limit and apply the catch sharing plan allocations to the two sectors.

<sup>21</sup> Baseline formula for allocation options are provided only for reference as to how the percentages were derived.

<sup>22</sup> Under Option 2, the Council would request that the IPHC use the fixed pound allocation as the number for charter halibut removals from Areas 2C and 3A that is included each year in its “Other Removals” deduction from the Total Constant Exploitation Yield (CEY).

example, if the initial allocation was 13.1% for Area 2C and the 1995-1999 average total CEY decreased by 20 percent, the Area 2C allocation would be decreased by 0.02%, from 13.1% to 11.1%. Likewise, if the total CEY were to increase or decrease by 25 percent to 34 percent from its average for the base period selected for the initial allocation at the time of final action, then the allocation would be increased or decreased by 25 percent from the base allocation. If the stock continued to increase or decrease by at least 10 percent increments, the allocation would be increased or decreased by commensurate 10 percent increments.

Suboption under Suboption to Options 2a, 2b, and 2c:

Stair step provision would be tied to:

- 1) Baseline years as proposed under Suboption to Options 2a, 2b, and 2c
- 2) CEY:
  - a) 2006 through 2008
  - c) 2008
- 3) Baseline of combined commercial and charter catch limit in:
  - a) 2006 through 2008
  - c) 2008

The suboption to Options 2a, 2b, and 2c would increase or decrease the charter allocation in predefined steps, whenever the halibut CEY changes by specified amounts with respect to the average total CEY for the base period selected for the initial allocation at the time of final action. The Council requested that those steps be based on changes to either the proposed baseline years, the total CEY, or the baseline of the combined catch limit. The suboption does not apply to Option 1 or Option 3, because those allocations are already directly linked to changes in a combined catch limit. Selecting the Option 2 suboption would result in an allocation to the charter sector that behaves more like Option 1 than a fixed poundage allocation. Anytime the CEY (or the combined commercial and charter catch limit in Suboption 3 under the Suboption to Options 2a, 2b, and 2c) changes by a predetermined amount, the charter allocation would be revised to the corresponding allocation. Allowing the charter allocation to vary with CEY (or the combined commercial and charter catch limit) removes the security of having a fixed-poundage allocation. For example, if the fixed-poundage allocation was implemented with 2007 as the base year, the 2008 CEY would have triggered a substantial reduction in the Area 2C allocation. However, if Option 2 was not modified to include the stair step up and down suboption, the commercial sector would have been required to absorb the entire reduction of available halibut.

Option 3: 50 percent fixed/50 percent floating allocation<sup>23</sup>

	Area 2C		Area 3A	
	50 percent of:	and 50 percent of:	50 percent of:	and 50 percent of:
a.	13.1 %	1.43 Mlb	14.1 %	3.65 Mlb
b.	16.4 %	1.69 Mlb	15.9 %	4.01 Mlb
c.	17.3 %	1.90 Mlb	15.4 %	4.15 Mlb

## Element 2 – Annual regulatory cycle

The Council has announced that its policy under Element 2 would be to allow the charter halibut season to remain open and fishing to continue for the specified season, operating under whatever restriction(s) were adopted pre-season by the Council. In other words, the Council does not seek to monitor the harvest in-season, and close the fishery when the allocation is reached. Rather, it believes its restrictions will be sufficient to achieve the sector allocation. Any overages or underages would be accounted in the IPHC stock assessment and halibut biomass estimate. Operationally, overages would result in a modest decrease

<sup>23</sup> Under Option 3, the Council could select either of two approaches: (1) as stated under footnote 1 or (2) the Council could request that the IPHC deduct the fixed portion of the allocation from “Other Removals” and deduct the floating portion of the allocation from a combined charter and commercial sector fishery catch limit.

in the combined charter and commercial longline IFQ allocation in the following year. Underages would accrue to the benefit of the halibut biomass and all user groups but would not be reallocated to the charter sector in the subsequent fishing year.

Management of the charter halibut sector to its allocation would be achieved, if necessary, through an annual regulatory analysis of management measures that takes into account the projected CEY for the following year and any overages by the charter industry in the past year(s). The Council could choose a policy for selecting a preferred alternative that would reduce the time between a charter allocation overage and implementation of regulations to eliminate the overage. Alternate policies are discussed under Element 4.

The Council has wrestled with the confines of State of Alaska data availability and the federal rulemaking process; this has been described as a “delayed feedback loop.” Three to four years may elapse between the year in which (1) an overage occurs; (2) the year in which ADF&G data report that an overage has occurred; (3) the year in which the Council selects a preferred alternative to address the overage; and (4) the year in which new regulations are in effect.

**Element 3 – Management toolbox**

The Council has announced that its policy under this element would be to select a preferred alternative from the list of possible management measures from its “toolbox” for a future analysis and rulemaking after it has been notified that a charter sector allocation has been exceeded. The estimated effects of potential management measures are provided only to illustrate how the Council’s policy may be implemented in the future. The Council would select the tool (or tools) that allow it to reduce charter harvest to the allocation.

Element 3 would establish two tiers of measures that the Council may utilize to manage the charter common pool allocation (Table 6). Tier 1 measures would be considered by the Council to manage the charter common pool allocation for a season of historical length and a two-fish daily harvest limit. Tier 2 measures would be used if Tier 1 measures are inadequate to constrain charter harvest to its allocation. The estimated effects of management measures are summarized in Table 7. Due to the inherent delay in implementation of regulations after an overage, management measures may be disproportionately restrictive to the estimated level of reduction, to ensure that the charter sector allocation is not exceeded in the future. In providing predictability and stability for all those that use this resource, the full charter allocation may not be harvested in every year and/or every area. No regulations would be generated under Element 3.

**Table 6 Proposed Management Measures by Tier.**

<b>Tier 1</b>	<b>Tier 2</b>
One Trip per Vessel per Day	Annual Catch Limits
No Retention of Halibut by Skipper and Crew	One-fish bag limit for all or a portion of the Season
Line Limits	Closing the charter fishery for all or a portion of the Season
Second Fish of a Minimum Size	
Second Fish at or below a Specific Length	

**Table 7 Estimated Effect of Management Measures.**

Tier	Management Measure	Sub-Option	Estimated Harvest Reduction	
			Area 2C	Area 3A <sup>1</sup>
Tier 1	One Trip per Vessel per Day	None	1.8% – 2.4%	5.5% – 6.3%
	No Retention by Skipper and Crew	None	4.3% – 4.7%	10.4%
	Line Limits <sup>2</sup>	None	Not Analyzed	Not Analyzed
	Second Fish of a Minimum Size <sup>3</sup>	45"	18.8% – 27.0%	32.5% – 39.3%
		50"	23.1% – 30.8%	36.9% – 43.3%
	Second Fish at or below a Length Limit <sup>4</sup>	32 Inches	19.7% – 26.1%	18.2% – 24.5%
		34 Inches	Not Analyzed	15.2% – 21.1%
36 Inches		Not Analyzed	12.1% – 18.3%	
Annual Catch Limits	Four Fish	16.4%	6.5%	
	Five Fish	9.3%	4.1%	
	Six Fish	4.3%	2.1%	
Tier 2	One-fish bag limit for All or a Portion of the Season <sup>5</sup>	Full Season	39.7% – 57.8%	47.1% – 62.9%
		May	1.8% – 2.6%	5.0% – 6.6%
		June	10.0% – 14.6%	12.4% – 16.5%
		July	14.5% – 21.1%	17.8% – 23.8%
		August	12.0% – 17.5%	9.9% – 13.2%
		September	1.4% – 2.0%	1.8% – 2.9%
Season Closure <sup>6</sup>	Full Season	100.0%	100.0%	
	May	5.2%	10.5%	
	June	25.7%	26.0%	
	July	35.4%	37.7%	
	August	29.9%	21.2%	
	September	3.7%	4.0%	

1. Numbers for Area 3A reflect the Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for a Regulatory Amendment to Implement Guideline Harvest Level Measures in the Halibut Charter Fishery in IPHC Regulatory Area 3A ( NPFMC 2007c) updated with ADF&G’s final 2006 harvest estimates.

2. Neither the Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for a Regulatory Amendment to Implement Guideline Harvest Level Measures in the Halibut Charter Fisheries in IPHC Regulatory Area 2C (NPFMC 2007b) nor NPFMC 2007c analyzed line limits as an individual option.

3. Upper estimates for each Area include an assumption of a 10 percent reduction in the demand for halibut charter trips.

4. Upper estimate assumes that anglers catch the average fish below the length limit based on biomass. Lower estimate assumes that anglers are able to high-grade by one two-inch size class. These estimates do not account for changes in demand that have occurred since 2006 including those changes resulting from a weak or recessionary national economy.

5. Upper estimates include an assumption of a 30 percent reduction in the demand for halibut charter trips. The analysis did not make any adjustments for anglers rescheduling their trips to other parts of the season which do not include the one-fish bag limit.

6. Estimates based on ADF&G data provided for NPFMC 2007b and NPFMC 2007c. Estimates do not include the effect of anglers migrating to other months or otherwise adapting to the closure.

Source: NPFMC 2007b and NPFMC 2007c.

**Element 4 – Timeline.**<sup>24</sup> Element 4 would identify a preferred alternative for the timing of future regulatory actions. It would not be implemented in regulation.

Element 4 is linked to discussions of an annual regulatory cycle under Element 2 and a management toolbox under Element 3. The Council has announced that it would identify its policy for setting a timeline for initiating new rulemaking once it has been notified of a charter allocation overage. The preferred regulatory timeline would be identified in the text of the CSP. No regulations would be generated as a result of Element 4. The estimated effects of potential timelines are provided to illustrate how the Council’s preferred policy may be implemented in the future.

The Council may select from one or more of the approaches described below or identify a new approach.

- A. Schedule final action in December. The Council could save one meeting cycle by basing its new RIR/IRFA on the previous, final analysis and proceeding straight to final action; it would not schedule an initial review of the analysis (which is Council policy and not a federal requirement). The Council could review the previous RIR/IRFA in the context of the ADF&G report on the latest calendar year estimates of sport halibut removals and consider that its initial review of the proposed action.

The RIR/IRFA would incorporate the most recent year of data and undergo a routine update. Final action would be scheduled in December to incorporate ADF&G charter halibut harvest estimates, which are released in early to mid-September each year. It is not possible to prepare a revised RIR/IRFA for either one or both regulatory areas in the two weeks between the time when ADF&G releases the data and the October Council meeting. A December final action would allow two to four weeks for public review of the analysis.

A critical problem with this approach is that NMFS does not believe that receiving the analysis from the Council in mid to late December allows sufficient time to implement the rule in time for the next charter halibut season. To address this problem, the Council could forego SSC review of the revised RIR/IRFA and NMFS would use the updated RIR/IRFA completed before the December Council meeting to develop a rule to implement management restrictions for the charter sector. Foregoing SSC review of the revised RIR/IRFA is reasonable because the analytical methodology would have previously been approved by the SSC and Council, and the revised analysis would include only an additional year’s data and harvest projections. Or the Council could schedule SSC review in December, take final action in December, and task staff with addressing SSC comments prior to submitting the analysis to the Secretary of Commerce.

- B. Prepare a supplemental analysis (only) prior to Council action. The Council could select its preferred alternative based on a supplemental analysis since the preparation of an RIR/IRFA prior to the selection of a preferred alternative is a Council policy only. The supplemental analysis could be a 2-3 page document provided to the Council prior to the October Council meeting. It would be similar to that prepared for Area 2C GHM measures in 2007.<sup>25</sup> A complete, revised EA/RIR/IRFA would be prepared by Council staff immediately after final action and submitted to the Secretary of Commerce.
- C. Dual preferred alternative. The Council could select alternate preferred alternatives (presumably in October based on a supplemental analysis) for management restrictions for the charter sector prior to the determination of the allocation by the IPHC (in January) using the CSP. A proposed rule could be published prior to IPHC action and solicit comments on both preferred alternatives or the proposed rule could be published after IPHC action and solicit comments on the remaining preferred alternative that would result from application of the CSP to the combined charter and commercial longline IFQ allocation, which was determined by the IPHC. It is possible that more than two preferred alternatives

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<sup>24</sup> The Council has identified its preference for a three-year timeline that includes an opportunity for adequate public comment period of the analysis prior to final action.

<sup>25</sup> [http://alaskafisheries.noaa.gov/npfmc/current\\_issues/halibut\\_issues/Area2CHalibut507.pdf](http://alaskafisheries.noaa.gov/npfmc/current_issues/halibut_issues/Area2CHalibut507.pdf)

could be selected by the Council, depending on the CSP formula for sector allocations of the combined charter and commercial IFQ allocation.

- D. Rulemaking would not depend on IPHC action under a fixed allocation. Public confusion would be minimized if the identification of the preferred alternative for future management restrictions was not dependent on the actions of the IPHC (in setting the combined charter and commercial IFQ allocations). Clarity in the supplemental analysis, Secretarial draft of the RIR/IRFA, proposed rule, and final rule would facilitate Secretarial action.
- E. Separate rulemaking for management measures. Development of separate rulemakings for restrictive charter halibut management measures and annual commercial halibut harvest measures would facilitate the implementation of measures that are necessary to start the commercial IFQ fishery. Some stakeholders have suggested that charter halibut management measures be included in the rulemaking for IPHC actions to speed its implementation; however, the requirement to respond to what may be numerous comments to possibly controversial, proposed charter halibut regulations could jeopardize timely implementation of commercial regulations. Further, only a final rule is published for annual commercial halibut regulations that are recommended by the IPHC; publication of a proposed rule for restrictive management measures is still required.

#### **Element 5 – Supplemental, individual use of commercial IFQ**

Charter limited entry permit holders would be allowed to lease commercial IFQ, in order to provide additional anglers with harvesting opportunities, not to exceed limits in place for unguided anglers.

- A. Leasing commercial IFQ for conversion to Guided Angler Fish (GAF).
  - 1. An LEP (Limited Entry Permit) holder may lease IFQ for conversion to GAF for use on the LEP.
  - 2. Commercial halibut QS holders may lease up to 1500 lb or 10% (whichever is greater) of their annual IFQ to LEP holders (including themselves) for use as GAF on LEPs. A CQE may lease up to 100% of its annual IFQ for use as GAF on their own LEPs.
  - 3. No more than 200–400 fish may be leased per LEP.
    - Suboption: LEPs w/endorsement for more than 6 clients may not lease more than 400–600 fish.
- B. LEP holders harvesting GAF while participating in the charter halibut fishery are exempt from landing and use restrictions associated with commercial IFQ fishery, but subject to the landing and use provisions detailed below.
- C. 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).
- D. Subleasing of GAF would be prohibited.
- E. Conversion of GAF back to commercial sector
  - 1. GAF holders may request NMFS convert unused GAF into IFQ pounds for harvest by the owner of the Quota Share in compliance with commercial fishing regulations.
  - 2. Unused GAF may revert back to pounds of IFQ and be subject to the underage provisions applicable to their underlying commercial QS
    - Option a: automatically on October 1 of each year; or
    - Option b: upon the request of the GAF holder if such request is made to NMFS in writing prior to October 1 of each year.
- F. Guided angler fish derived from commercial QS may not be used to harvest fish in excess of the non-charter bag limit on any given day.
- G. Charter LEP holders landing GAF on private property (e.g., lodges) and motherships would be required to allow ADF&G samplers/enforcement personnel access to the point of landing.



H. Commercial and charter fishing may not be conducted from the same vessel on the same day.

#### **Element 6 – Catch accounting system**

1. The current Statewide Harvest Survey and/or logbook data would be used to determine the annual harvest.
2. A catch accounting system would need to be developed for the GAF landed by the charter industry.
3. As part of data collection, recommend the collection of length measurements when supplemental IFQs are leased for use, and compare to the annual average length to assure accurate catch poundage is accounted for, and to allow gathered length measurement information to be used in the formulation of the average weight used in the conversion of IFQs to GAF.

#### ***Alternative 3. (Preferred Alternative) Establish a catch sharing plan that includes sector accountability***

##### **Element 1 – Initial allocation and bag limits.**

In **Area 2C**, when the combined charter and commercial setline catch limit is less than 5 Mlb, the charter allocation will be 17.3 percent of the combined charter and commercial setline catch limit. When the combined charter and commercial setline catch limit is 5 Mlb and above the allocation will be 15.1 percent. Management variance not to exceed 3.5 percentage points (plus or minus) may occur around this allocation. The Council's expectation is that the variances will balance over time to ensure IPHC conservation and management objectives are achieved.

Trigger 1: When the combined charter and commercial setline catch limit is < 5 Mlb, the halibut charter fishery will be managed under a 1 halibut daily bag limit. The allocation for the charter sector will be 17.3 percent of the combined charter and commercial setline catch limit. The charter sector's expected catch may vary between 13.8 percent and 20.8 percent. However, if the charter harvest for an upcoming season is projected to exceed 20.8 percent of the combined charter and commercial setline catch limit, then a maximum size limit will be implemented to reduce the projected harvest level to be lower than 17.3 percent of the combined charter and commercial setline catch limit. If the projected charter harvest results in a catch rate (percentage of projected charter harvest divided by the combined commercial and charter catch limit for that Area) that is lower than the lowest charter harvest percentage in that trigger range, then the charter harvest shall be managed under the daily bag limit of the next higher trigger, so long as the projected charter harvest percentage of the combined catch limit falls within the percentage range included under that trigger.

Trigger 2: When the combined charter and commercial setline catch limit is  $\geq$  5 Mlb and < 9 Mlb, the halibut charter fishery shall be managed under a 1 halibut daily bag limit. The charter sector's allocation will be 15.1 percent of the combined catch limit. The charter sector's expected catch may vary between 11.6 percent and 18.6 percent. However, if the charter harvest for an upcoming season is projected to exceed 18.6 percent of the combined catch limit, then a maximum size limit will be implemented to reduce the projected harvest level to 15.1 percent of the combined catch limit. If the projected charter harvest results in a catch rate (percentage of projected charter harvest divided by the combined catch limit for that Area) that is lower than the lowest charter harvest percentage in that trigger range, then the charter harvest shall be managed under the daily bag limit of the next higher trigger, so long as the projected charter harvest percentage of the combined catch limit falls within the percentage range included under that trigger.

Trigger 3: When the combined catch limit is  $\geq$  9 Mlb and < 14 Mlb, the charter halibut fishery shall be managed under a 2 halibut daily bag limit (only one of which may be longer than 32 inches). The charter sector's allocation will be 15.1 percent of the combined catch limit. The charter sector's expected catch

may vary between 11.6 percent and 18.6 percent. However, if the charter harvest for an upcoming season is projected to exceed 18.6 percent of the combined catch limit, then the charter fishery will revert back to a 1 halibut daily bag limit. If the projected charter harvest results in a catch rate (percentage of projected charter harvest divided by the combined catch limit for that Area) that is lower than the lowest charter harvest percentage in that trigger range, then the charter harvest shall be managed under the daily bag limit of the next higher trigger, so long as the projected charter harvest percentage of the combined catch limit falls within the percentage range included under that trigger.

Trigger 4: When the combined catch limit is  $\geq$  14 Mlb, the halibut charter fishery will be managed under a 2 halibut daily bag limit. The charter sector's allocation will be 15.1 percent of the combined catch limit. The charter sector's expected catch may range between 11.6 percent and 18.6 percent. However, if the charter harvest for an upcoming season is projected to exceed 18.6 percent of the combined catch limit, the charter fishery will revert back to a 2 halibut daily bag limit. Only one of the retained halibut may be longer than 32 inches.

In **Area 3A**, when the combined charter and commercial setline catch limit is  $<10$  Mlb, the charter allocation will be 15.4 percent of the combined charter and commercial setline catch limit. When the combined charter and commercial setline catch limit is 10 Mlb and above, the allocation will be 14.0 percent. Management variance not to exceed 3.5 percentage points (plus or minus) may occur around this allocation. The Council's expectation is that the variances will balance over time to ensure IPHC conservation and management objectives are achieved.

Trigger 1: When the combined charter and setline catch limit is  $< 10$  Mlb, the charter halibut fishery will be managed under a 1 halibut daily bag limit. The charter sector's allocation will be 15.4 percent of the combined charter and setline catch limit. The charter sector's expected catch may vary between 11.9 percent and 18.9 percent of the combined catch. However, if the charter harvest for an upcoming season is projected to exceed 18.9 percent of the combined catch limit, then a maximum size limit will be implemented to reduce the projected charter harvest below 15.4 percent of the combined harvest. If the projected charter harvest results in a catch rate (percentage of projected charter harvest divided by the combined commercial and charter catch limit for that Area) that is lower than the lowest charter harvest percentage in that trigger range, then the charter harvest shall be managed under the daily bag limit of the next higher trigger, so long as the projected charter harvest percentage of the combined catch limit falls within the percentage range included under that trigger.

Trigger 2: When the combined catch limit is  $\geq 10$  Mlb and  $< 20$  Mlb, the halibut charter fishery will be managed under a 1 halibut daily bag limit. The charter sector's allocation will be 14.0 percent of the combined catch limit. The charter sector's expected catch may vary between 10.5 percent and 17.5 percent of the combined catch limit. However, if the charter harvest for an upcoming season is projected to exceed 17.5 percent of the combined catch limit, then a maximum size limit will be implemented to reduce the projected charter harvest level to 14 percent of the combined catch limit. If the projected charter harvest results in a catch rate (percentage of projected charter harvest divided by the combined catch limit for that area) that is lower than the lowest charter harvest percentage in that trigger range, then the charter harvest shall be managed under the daily bag limit of the next higher trigger, so long as the projected charter harvest percentage of the combined catch limit falls within the percentage range included under that trigger.

Trigger 3: When the combined limit is  $\geq 20$  Mlb and  $< 27$  Mlb, the halibut charter fishery will be managed under a 2 halibut daily bag limit (only one of which may be longer than 32 inches). The charter sector's allocation will be 14.0 percent of the combined catch limit. The charter sector's expected catch may vary between 10.5 percent and 17.5 percent of the combined catch limit. However, if the charter harvest for an upcoming season is projected to exceed 17.5 percent of the combined catch limit, then the charter fishery will revert back to a 1 halibut daily bag limit. If the projected charter harvest results in a catch rate (percentage of projected charter harvest divided by the combined catch limit for that Area) that

is lower than the lowest charter harvest percentage in that trigger range, then the charter harvest shall be managed under the daily bag limit of the next higher trigger, so long as the projected charter harvest percentage of the combined catch limit falls within the percentage range included under that trigger.

Trigger 4: When the combined catch limit is  $\geq$  27 Mlb, the halibut charter fishery will be managed under a 2 halibut daily bag limit. The charter sector's allocation will be 14.0 percent of the combined catch limit. The charter sectors expected harvest may range between 10.5 percent and 17.5 percent of the combined catch limits. However, if the charter harvest for an upcoming season is projected to exceed 17.5 percent of the combined catch limit, the charter fishery will revert back to a 2 halibut daily bag limit. Only one of the retained halibut may be longer than 32 inches.

In Areas 2C and 3A, no retention of halibut by skipper and crew while paying clients are on board would be allowed.

### **Element 2 – Annual regulatory cycle/timeline.**

It is the Council's intent to not revisit or readjust bag limits; such bag limit changes will be triggered by changes in combined charter and commercial setline catch limits established annually by the IPHC. Bag limits and maximum size limits would be implemented by the IPHC based upon its determination of the combined catch limits and the bag limit parameters described above.

**Element 3** – Supplemental, individual use of commercial IFQ to allow charter limited entry permit holders (LEP) to lease commercial IFQ, in order to provide additional harvesting opportunities for charter anglers, not to exceed limits in place for unguided anglers.

- A. Leasing commercial IFQ for conversion to Guided Angler Fish (GAF).
  - 1. An LEP holder may lease IFQ for conversion to GAF for use on the LEP.
  - 2. Commercial halibut QS holders may lease up to 1,500 pounds or 10% (whichever is greater) of their annual IFQ to LEP holders (including themselves) for use as GAF on LEPs. If an IFQ holder chooses to lease to a CQE, then the same limitations apply as if they were leasing to an individual charter operator—1,500 lb or 10 % whichever is greater. With regard to CQE leasing: any quota which a CQE holds, regardless of its origin, could be leased up to 100% to eligible residents of the CQE community. For example, a CQE may hold quota share derived from purchase, lease from another qualified CQE, or leased from an individual, and then lease up to 100% of the quota it holds.
  - 3. No more than 400 GAF may be assigned to an LEP endorsed for 6 or fewer clients.  
No more than 600 GAF may be assigned to an LEP endorsed for more than 6 clients.
- B. LEP holders harvesting GAF while participating in the charter halibut fishery are exempt from landing and use restrictions associated with commercial IFQ fishery, but subject to the landing and use provisions detailed below.
- C. 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 (Area 2C or Area 3A) during the previous year as determined by ADF&G.<sup>26</sup>
- D. Subleasing of GAF would be prohibited.
- E. Conversion of GAF back to commercial sector.

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<sup>26</sup>The Council's long-term plan may require further conversion to some other form (e.g., angler days) in a future action.

Unused GAF may revert back to pounds of IFQ and be subject to the underage provisions applicable to their underlying commercial QS either automatically on November 1 of each year or upon the request of the GAF holder if such request is made to NMFS in writing prior to November 1 of each year.

- F. Guided angler fish derived from commercial QS may not be used to harvest fish in excess of the unguided sport bag limit on any given day.
- G. Charter operators landing GAF on private property (e.g., lodges) and motherships would be required to allow ADF&G samplers/enforcement personnel access to the point of landing.
- H. Commercial and charter fishing may not be conducted from the same vessel on the same day.

### **Summary of Alternatives Considered**

**Alternative 1** is the No Action Alternative. It would continue management of the charter sector under the GHL Program and harvest control measures. It includes current federal and state regulations that would otherwise remain unchanged. Current federal regulations for Area 2C include (1) a daily bag limit of one halibut with a maximum length of 37 inches per day; (2) a prohibition on charter vessel guides, operators, and crew from catching and retaining halibut; and (3) a limit on number of lines used to fish for halibut, which must not exceed six or the number of charter vessel anglers onboard the charter vessel, whichever is less. Current federal regulations for Area 3A include a daily bag limit of two halibut of any size.

A limited entry program for both Area 2C and Area 3A was implemented in January 2010. Beginning February 1, 2011, charter halibut permits are required to be on board all vessels on which anglers catch and retain halibut in Area 2C and Area 3A (75 FR 595). The RIR/IRFA incorporates projections of the number of charter LEPs in each area.

The GHL Program set a fixed allocation in pounds to the charter sector in Area 2C and Area 3A in 2004, which included step-wise reductions as the halibut biomass decreased. Since then, the GHL has been exceeded each year in Area 2C and has been achieved in Area 3A. The delay between the year in which an overage occurs and when a management response is implemented by NMFS has been referred to as a “delayed feedback loop.” For instance, the GHL overage in 2004 was not identified by management agencies until September 2005. The Council initiated an analysis to implement restrictive management measures in October 2005. The Council selected an annual limit of five fish as its preferred alternative for Area 2C in April 2006 (NPFMC 2006). The Council rescinded this preferred alternative in October 2006, upon request of NMFS because of high implementation and enforcement costs. At that same meeting, ADF&G reported that charter halibut harvests in 2005 and 2006 exceeded the Area 2C GHL by increasing levels in those two years. The Council added several management options to Alternative 2, which resulted in a revised analysis in April 2007 and selection of a new preferred alternative in June 2007 for implementation for the 2008 charter season. Because the Council action could not be implemented in time for the 2007 charter season, NMFS initiated its own analysis of alternatives to be implemented for the 2007 charter season. NMFS implemented its preferred alternative of a season-long two halibut daily bag limit, with a maximum size limit of 32 inches for one of the two halibut on June 1, 2007. In summary, the delayed feedback resulted in restrictive action in 2007 for an overage in 2004.

Fundamentally, there is little difference between the operation of the GHLS and the proposed allocation to the charter sector; however, the charter harvest limits could be set lower or higher than the GHLS in the proposed action. The No Action Alternative would not create a catch sharing plan between the charter and commercial halibut sectors and would not set an annual cycle intended to reduce the delayed feedback between an overage and when restrictive management measures may be implemented. Status quo also

includes state regulations. Prior to state actions in 2006<sup>27</sup> and federal action in 2007 in Area 2C, charter halibut harvests had been effectively unrestricted because the GHL is not a “hard” cap.<sup>28</sup>

Taking no action would continue management under GHGs in Areas 2C and 3A. It may require annual regulatory adjustments to optimally match charter halibut harvests to the respective GHGs. The Council has acknowledged the inefficiency of managing the charter sector under the GHGs by its initiation of this analysis.

**Alternative 2** would set a CSP for an initial allocation of halibut harvests between the charter sector and commercial IFQ sector in Area 2C and Area 3A and allow charter halibut LEP holders to lease commercial halibut IFQ to increase their share of the allocation within a fishing season. It also affirms a policy under which the Council commits to annually consider changes to federal regulations (as needed) to limit charter halibut harvests to its allocation.

The Council is considering 10 options under Alternative 2, Element 1 for initial sector allocations in each area. These include four fixed percentage options, three fixed poundage options that included suboptions to step the allocations up or down depending on halibut biomass, and three options that match 50 percent of one of the fixed pound and one of the percentage options. Element 2 would define the annual regulatory cycle, focusing on how the halibut charter fishery’s common pool of halibut would be regulated in the current and future years. Element 3 would define the management ‘tool box’ that would be available to the Council to adjust future harvest levels. Element 4 provides examples of how the timeline for management decisions and actions to adjust the charter sector’s harvests would be applied, if they are needed. Element 5 defines how charter LEP holders would acquire and use commercial IFQ to supplement the halibut that is available from its common pool. Finally, Element 6 provides a discussion of the catch accounting system that would be needed to monitor two classes of halibut that would be harvested by the charter sector under Alternative 2. The Council identified its preliminary preference for a three year timeline that includes an opportunity for adequate public comment period of the analysis prior to final action.

The December 2007 motion also addressed three recordkeeping and reporting methods (electronic reporting, harvest tags, and punch cards), but deferred to the recommendations by NMFS and ADF&G for the determination of appropriate and necessary recordkeeping tools. These are discussed in an implementation plan dated September 2008.<sup>29</sup>

**Alternative 3 (Preferred Alternative)** would replace the GHG Program with a catch sharing plan to establish a clear allocation between charter and commercial setline sectors in Area 2C and Area 3A. Under the plan, the Council would request that the IPHC annually set a combined charter and commercial setline catch limit to which the allocation percentage for each area will be applied to establish the domestic harvest targets for each sector and use the ADF&G charter halibut harvest projections for the estimate of charter removals for determining the combined catch limit. This action would also establish the management measures for the charter sector at identified tiers of halibut abundance and combined catch limits. The Council recognizes that management measures are imprecise; therefore, a small variance can be expected to occur around the allocation. The Council’s expectation is that the variances will balance over time to ensure Council and IPHC conservation and management objectives are achieved. The preferred alternative includes a prohibition on the retention of halibut by skipper and crew while paying clients are onboard under all allocations and triggers. A final implementation plan for the preferred alternative will be prepared by NMFS.

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<sup>27</sup> Emergency orders have been 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 for Area 2C 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.

<sup>28</sup> The fishery is not closed when the GHG is reached.

<sup>29</sup> [http://www.alaskafisheries.noaa.gov/npfmc/current\\_issues/halibut\\_issues/halibut.htm](http://www.alaskafisheries.noaa.gov/npfmc/current_issues/halibut_issues/halibut.htm)

Supplemental, individual use of commercial IFQ would allow charter LEP holders to lease commercial IFQ, in order to provide anglers with additional harvesting opportunities, not to exceed limits in place for unguided anglers. This feature of the CSP mitigates the initial allocation by providing a market-based mechanism for the charter sector to increase its allocation, while compensating the commercial sector for reduced removals.

Neither Element 2 (annual regulatory cycle) nor Element 4 (timeline) was included in the preferred alternative because these elements were rendered moot by the initial allocation, and management measures and GAF Program, which would be implemented under the CSP in federal regulations.

<b>Preferred Alternative: Area 2C</b>				
Combined Fishery CEY (million lb)	Allocation	Charter Fishery Bag & Size Limit Regulations		
		If charter harvest within allocation range	If charter harvest projected to exceed allocation range	If charter harvest projected to be below allocation range
Tier 1 <5	Comm alloc = 82.7% Charter alloc = 17.3% Charter range = 13.8-20.8%	One fish	Maximum size limit imposed that brings harvest to <17.3%	One fish
Tier 2 ≥5 - <9	Comm alloc = 84.9% Charter alloc = 15.1% Charter range = 11.6-18.6%	One fish	Maximum size limit imposed that brings harvest to <15.1%	Two fish, but one must be less than 32" in length
Tier 3 ≥9 - <14	Comm alloc = 84.9% Charter alloc = 15.1% Charter range = 11.6-18.6%	Two fish, one must be less than 32" in length	One fish	Two fish
Tier 4 ≥14	Comm alloc = 84.9% Charter alloc = 15.1% Charter range = 11.6-18.6%	Two fish	Two fish, but one must be less than 32" in length	Two fish
<b>Preferred Alternative: Area 3A</b>				
Combined Fishery CEY (million lb)	Allocation	Charter Fishery Bag & Size Limit Regulations		
		If charter harvest within allocation range	If charter harvest projected to exceed allocation range	If charter harvest projected to be below allocation range
Tier 1 <10	Comm alloc = 84.6% Charter alloc = 15.4% Charter range = 11.9-18.9%	One fish	Maximum size limit imposed that brings harvest to <15.4%	One fish
Tier 2 ≥10 - <20	Comm alloc = 86.0% Charter alloc = 14.0% Charter range = 10.5-17.5%	One fish	Maximum size limit imposed that brings harvest to <14.0%	Two fish, but one must be less than 32" in length
Tier 3 ≥20 - <27	Comm alloc = 86.0% Charter alloc = 14.0% Charter range = 10.5-17.5%	Two fish, one must be less than 32" in length	One fish	Two fish
Tier 4 ≥27	Comm alloc = 86.0% Charter alloc = 14.0% Charter range = 10.5-17.5%	Two fish	Two fish, but one must be less than 32" in length	Two fish

Source: S. Meyer

**Other alternatives.** The Council previously considered and rejected an alternative that would have allowed compensated reallocation shifts between the commercial IFQ and charter sectors. Options considered would have allowed the development of a common pool management system and/or an individual private management system. Three suboptions included 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 likely would have impeded implementation of both types of systems.<sup>30</sup> The Council rejected the compensated reallocation alternative in October 2007 because a draft analysis

<sup>30</sup> [http://www.alaskafisheries.noaa.gov/npfmc/current\\_issues/halibut\\_issues/HalibutReallocation907.pdf](http://www.alaskafisheries.noaa.gov/npfmc/current_issues/halibut_issues/HalibutReallocation907.pdf)

identified a number of hurdles to its successful and timely implementation. These hurdles include (1) the need for both federal and state legislation to authorize the proposed actions; (2) the need for funding the purchase of commercial QS; (3) controversy regarding the proposed pro rata reduction of the value of commercial halibut QS; and (4) the additional time required to allow various facets of the proposed program to be implemented (NPFMC 2007c). The Council replaced the compensated reallocation alternative with Alternative 2. That alternative is a simpler, more limited approach that would allow voluntary, in-season leasing of commercial halibut IFQs to individual charter halibut LEP holders while the Council considers a permanent management solution. Alternative 3 refined the proposed action into its Preferred Alternative.

The Council also rejected an option that would have allowed charter LEP holders to transfer (i.e., purchase) commercial halibut QS because it was not supported by the charter halibut sector.

## 1.8 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 total allowable catch (TAC), allowable biological catch (ABC), and overfishing level (OFL) at various levels (NMFS 2004<sup>31</sup>). 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<sup>32</sup>). 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 (PSC) limits, which include a discussion on the management of halibut bycatch.

Essential Fish Habitat Identification and Conservation in Alaska EIS. This EIS (NMFS 2005b<sup>33</sup>) 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. The analysis indicates that there are long-term effects of

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<sup>31</sup> <http://www.alaskafisheries.noaa.gov/sustainablefisheries/default.htm>

<sup>32</sup> <http://www.alaskafisheries.noaa.gov/analyses/specs/eis/default.htm>

<sup>33</sup> <http://www.alaskafisheries.noaa.gov/habitat/seis/efheis.htm>

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.

Bering Sea and Aleutian Islands (BSAI) and Gulf of Alaska (GOA) Groundfish Fisheries Section 7 Consultation - Biological Opinion. This biological opinion (NMFS 2010<sup>34</sup>) documents the consultation on the effects of the authorization of groundfish fisheries in the Bering Sea and Aleutian Islands region (BSAI) under the Fishery Management Plan (FMP) for Groundfish of the Bering Sea and Aleutian Islands Management Area, and on the authorization of groundfish fisheries in the Gulf of Alaska (GOA) under the FMP for Groundfish of the Gulf of Alaska, including the prosecution of parallel groundfish fisheries in Alaska state waters. This biological opinion considers the fisheries and the overall management framework established by the respective FMPs to determine whether that framework contains necessary measures to ensure the protection of listed species and critical habitat.

The western distinct population segment (WDPS) of Steller sea lion is listed as endangered under the Endangered Species Act, and the species population in the Aleutian Islands is declining. Atka mackerel and Pacific cod are principal prey species for Steller sea lions in the Aleutian Islands. The biological opinion found that continuing with the current fishing levels and practices in the western and central Aleutian Islands sub-regions, particularly within critical habitat, was likely to jeopardize the continued existence of the WDPS of Steller sea lions and adversely affect their critical habitat. The biological opinion included one reasonable and prudent alternative (RPA), which had multiple fishery management measures or elements that were essential to avoid the likelihood of the groundfish fisheries jeopardizing the continued existence of the endangered WDPS of Steller sea lion or adversely modifying its designated critical habitat.

Environmental Assessment/Regulatory Impact Review for Revisions to the Steller Sea Lion Protection Measures for the Bering Sea and Aleutian Islands Management Area Groundfish Fisheries. The EA/RIR (NMFS 2010<sup>35</sup>) evaluates environmental, social, and economic effects of RPA options for the Bering Sea and Aleutian Islands Management Area groundfish fisheries, in particular the Atka mackerel and Pacific cod fisheries. The EA/RIR analyzes options to revise management of the Atka mackerel and Pacific cod fisheries to ensure the effects of these fisheries are not likely to result in jeopardy of extinction or adverse modification or destruction of critical habitat for the WDPS of Steller sea lions. Impacts are disclosed, both significantly positive and significantly negative as required by NEPA. This document also describes the life history characteristics of Steller sea lions and potential interactions with the groundfish fishery.

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 2011 are specified in the *Federal Register* (76 FR 11111, March 1, 2011). 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. 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 2010 North Pacific Groundfish Stock Assessment and Fishery Evaluation Reports for 2011 (NPFMC 2010b).

The IPHC annually publishes a summary of current management, research, and harvest recommendations for its annual meeting. This document may be found on the IPHC's website.<sup>36</sup>

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<sup>34</sup> <http://alaskafisheries.noaa.gov/protectedresources/stellers/esa/biop/final/1210.htm>

<sup>35</sup> [http://alaskafisheries.noaa.gov/analyses/ssl/sslprotections\\_eair1210.pdf](http://alaskafisheries.noaa.gov/analyses/ssl/sslprotections_eair1210.pdf)

<sup>36</sup> <http://www.iphc.washington.edu/halcom/default.htm>



## 1.9 Potential environmental impacts

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 in each sector 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.

The proposed catch sharing plan for Area 2C and Area 3A is limited in scope and would not likely affect all environmental components within the areas. Table 8 shows the three potentially affected components: groundfish, halibut stocks, and the socioeconomic environment. The potential direct effects of the alternatives on the resource could be caused by changes to the amount of incidental catch of groundfish species (principally rockfishes) and halibut mortality in the charter fishery through changes in the amount of halibut available for harvest by anglers under various allocation options. The potential effects of the alternatives on the resource are described in section 1.10 of the EA.

Negative impacts on non-halibut species caught in the charter halibut fishery, including salmon are not expected, because current ADF&G and federal management closely monitors stock health and 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 in the charter halibut fishery. Salmon is the primary species other than halibut targeted in the sport fishery. Information is not available to predict small changes in harvest patterns of due to the alternatives; however, given the magnitude of the charter fishery, 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.

**Table 8 Resource components potentially affected by the proposed alternatives.**

Alternatives	Potentially Affected Component							
	Physical Environment	Benthic Community	Groundfish	Marine Mammals	Seabirds	Non specified Species	Halibut	Socioeconomic
Alt 1	NA	NA	NA	NA	NA	NA	NA	NA
Alt 2	N	N	<u>Y</u>	N	N	N	<u>Y</u>	<u>Y</u>
Alt 3 (Preferred alternative)	N	N	<u>Y</u>	N	N	N	<u>Y</u>	<u>Y</u>

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.

The socioeconomic environment may be directly affected through changes in the amount of halibut available for harvest by anglers under various allocation options. The socioeconomic environment for the charter and commercial sectors may also be directly and indirectly affected by allocation conflicts for fully utilized species such as halibut, rockfish, and salmon. A detailed discussion of potential socioeconomic impacts is provided in section 2.5 of the RIR.

No direct or indirect effects are expected on the physical environment, benthic community, EFH, non-specified and forage species, marine mammals, and sea bird components of the environment. No effect is expected for these components because none of the alternatives would change current fishing practices (e.g., season and gear types) harvest limits, or regulations protecting habitat, EFH, and important breeding areas as described in previous NEPA documents (section 1.6). No effects are expected for marine

mammals because neither existing protection measures nor allowable harvest amounts for important prey species would be changed. None of the alternatives would change total TAC amounts, methods, season closure dates, or areas closed to fishing.

Because this action affects fishing activity at sea, the alternatives would not affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places. The current halibut fisheries do not cause loss or destruction of significant scientific, cultural, or historical resources in the affected area. This action is not likely to adversely affect significant scientific, cultural, or historical resources in the affected area because none of the alternatives would change current fishing practices (e.g., season and gear types), harvest limits, or regulations protecting habitat, EFH, and important breeding areas.

This action would not introduce or spread a nonindigenous species into the Gulf of Alaska beyond those previously identified because it does not change fishing, processing, or shipping practices that may lead to the introduction of nonindigenous species.

This action poses no known violation of federal, state, or local laws or requirements for the protection of the environment. On July 1, 2011, the federally approved Alaska Coastal Management Program expired, resulting in a withdrawal from participation in the Coastal Zone Management Act's National Coastal Management Program. The Coastal Zone Management Act Federal consistency provision in section 307 no longer applies in Alaska.

## **1.10 Potential Impacts on Resource Components**

### **The Pacific halibut stock assessment and harvest policy**

The IPHC sets area catch limits for the commercial fishery in proportion to halibut abundance (Figure 4). 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 would 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.

The annual exploitable biomass and Fishery CEY for each IPHC regulatory area was estimated in 2008 using the following steps (B. Clark, IPHC, personal communication):

1. Estimate the coastwide exploitable biomass;
2. Apportion exploitable biomass among regulatory areas using a three year average of survey CPUE rates weighted by bottom area;
3. Calculate Total CEY in each area by applying an area-specific target harvest rate (20 percent in Areas 2, 3 and 4A; 15 percent in Areas 4B and 4CDE); and
4. Calculate Fishery CEY in each area.

In Alaska, the IPHC sets catch limits only for the directed commercial halibut fishery. Therefore, changes in the charter harvest have a delayed effect on the commercial catch limits and not an immediate, pound-for-pound effect. The commercial catch limit is based on the Fishery CEY. In setting the commercial catch limits, the IPHC considers area-specific harvest policy objectives. From the early 2000s through 2010, the Commission staff applied a "Slow Up Fast-Down" (SUFastD) policy to the Fishery CEY in developing its commercial fishery catch limit recommendations for the Commission. The Commission's SUFastD policy was intended to limit abrupt changes in commercial catch limits from one year to the next in the following manner. If a Fishery CEY was greater than the previous year's commercial catch limit, then the IPHC staff's recommended catch limit increased by only 33.3 percent of the difference between the previous year's commercial catch limit and the Fishery CEY. If the Fishery CEY was lower

than the previous year's catch limit, the recommended catch limit reduction was limited to 50 percent of the difference between the previous year's commercial catch limit and the Fishery CEY. Thus, the commercial catch limit was responsive to changes in abundance as well as changes in assessment methodology without causing abrupt annual fluctuations.

Under the SUFastD policy, the IPHC could establish commercial catch limits were greater than or less than, but not necessarily equal to, the Fishery CEY. The SUFastD approach was asymmetric around the target value, i.e., the catch limit responded more strongly to estimated decreases in biomass than to estimated increases. The Commission adopted this asymmetric approach for two reasons: first, the halibut stock assessment generally had a better information base for estimating decreasing biomass compared with increasing biomass; and second, such an asymmetric policy followed the Precautionary Approach.

In 2011, Commission staff determined that the stock modeling simulations that gave support to SUFastD did not capture the current conditions faced by the stock (Hare 2011). Since 2004, the biomass of halibut available for harvest (exploitable biomass) has been in a constant downward trajectory. Because removals have been in excess of the exploitable biomass target harvest rate (20%) and each subsequent annual exploitable biomass estimate has been lower than the previous year's estimate, the target harvest rate could never be met when only 50% of the intended reduction in removals is taken under the SUFast down policy. For the 2011 fishery, staff recommended a "Slow Up Full-Down" (SUFulld) adjustment. Under the SUFulld adjustment, if the Fishery CEY was greater than the previous year's commercial catch limit, then the IPHC staff's recommended catch limit increased by only 33.3 percent of the difference between the previous year's commercial catch limit and the Fishery CEY. If the Fishery CEY was lower than the previous year's catch limit, the recommended catch limit reduction would be 100 percent of the difference between the previous year's commercial catch limit and the Fishery CEY. The Commission adopted the staff recommendation and shifted its harvest control rule to apply the SUFulld policy to implement the full reductions in catch limits identified by the stock assessment. Thus, the Area 2C and Area 3A commercial catch limits were equal to the Fishery CEY in 2011.

As reported in an IPHC news release,<sup>37</sup> the 2007 Pacific halibut stock assessment implemented a coastwide estimation of biomass, compared with previous assessments which assessed stock biomass for each individual IPHC regulatory area. This approach was introduced for the 2006 stock assessment but was not endorsed by the Commission at its 2007 Annual Meeting, which requested that staff conduct a public workshop on the new assessment approach. Following the June 2007 stock assessment workshop and an external peer review of the assessment,<sup>38</sup> the Commission and its advisory bodies endorsed the coastwide approach to the assessment of halibut stock abundance at the 2008 Annual Meeting. The staff's catch limit recommendations, arising from IPHC survey-based apportionment of the coastwide biomass, were accepted for most areas. As a follow-up, the Commission requested a public workshop in 2008 to investigate additional apportionment methods. For 2008, the Commission adopted a 20 percent harvest rate in Areas 2C through 4A. Thus, for 2008 the Commission recommended commercial fishery catch limits of 6.21 Milb for Area 2C and 24.22 Milb for Area 3A.

Under the coastwide assessment, the coastwide biomass estimate for 2008 was 13 percent lower due to a revised production model used in the stock assessment and lower fishery and survey CPUE in 2007. The coastwide Total CEY was 17 percent lower for 2008 due to the lower biomass estimate and adoption of a standard 20 percent harvest rate for all of Area 2 (compared with 25 percent in 2007). For Area 3A, the Total CEY was lower using the coastwide assessment in 2008 because of a lower coastwide biomass estimate and lower survey apportionment to this area. The 2007 catch limit was in line with the CEY using the coastwide assessment. Regarding Area 2C, the Total CEY was lower in 2008 than in 2007

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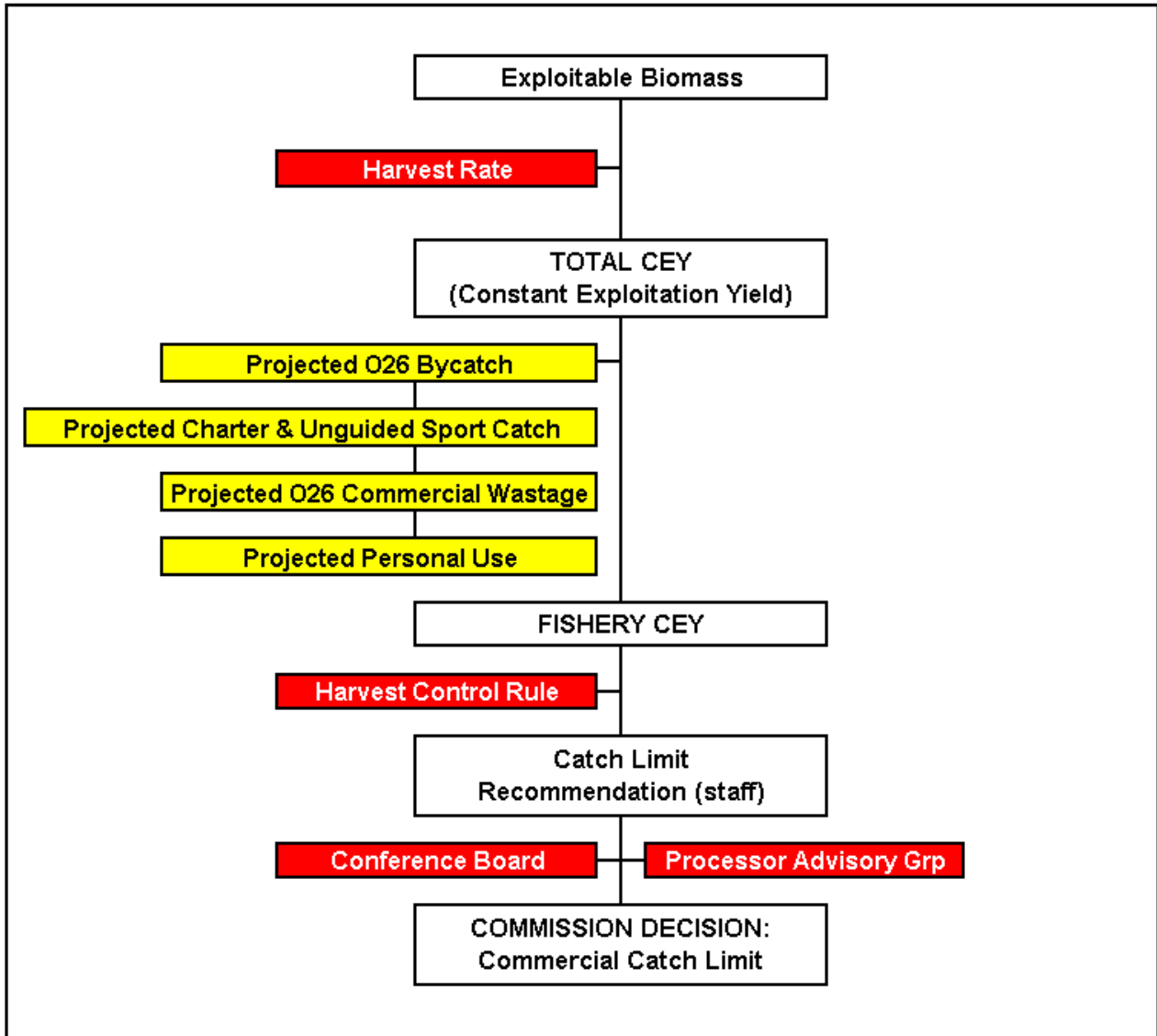
<sup>37</sup><http://www.iphc.washington.edu/news-releases/news-releases-2008/54-nr20080122.html>

<sup>38</sup><http://www.iphc.washington.edu/meetings-and-events/22-workshops/31-stock-assessment-workshop-2007.html>

because of the adoption of a standard 20 percent harvest rate (compared to 25 percent in 2007), and from the slight drop in the area biomass estimate (Figure 5 and Figure 6).

The use of a coastwide assessment with a coastwide selectivity, differing harvest rates by regulatory area, and partitioning of coastwide biomass with survey estimates of distribution creates some substantial changes in CEY and recommended catch limits among areas. Lower recommended catch limits are identified for Area 2, while Areas 3 and 4 have higher recommended catch limits. A large component of these differences is associated with the different distribution of biomass associated with survey partitioning of a coastwide total biomass, compared with the traditional closed-area biomass distribution. As noted in the 2005 stock assessment, the survey distribution of biomass is more consistent with other estimates of biomass distribution that are not dependent on the stock assessment (Clark and Hare 2006).

The IPHC staff recognizes that adoption of the coastwide assessment and survey apportionment results in a significant shift in the estimated distribution of exploitable biomass. A recent analysis concludes that exploitation rates on the eastern portion of the stock have been too high in the past decade, resulting in lower biomass in Area 2, than would be realized if harvest rates had been near the target level. Ultimately, a lowered harvest rate will permit rebuilding of the exploitable biomass in Area 2 and an increase in available yield. The pace of that rebuilding will be affected by the strength of year classes recruiting to the fishery over the next several years.



**Figure 4** The IPHC stock assessment and commercial catch limit setting process (Source: IPHC).

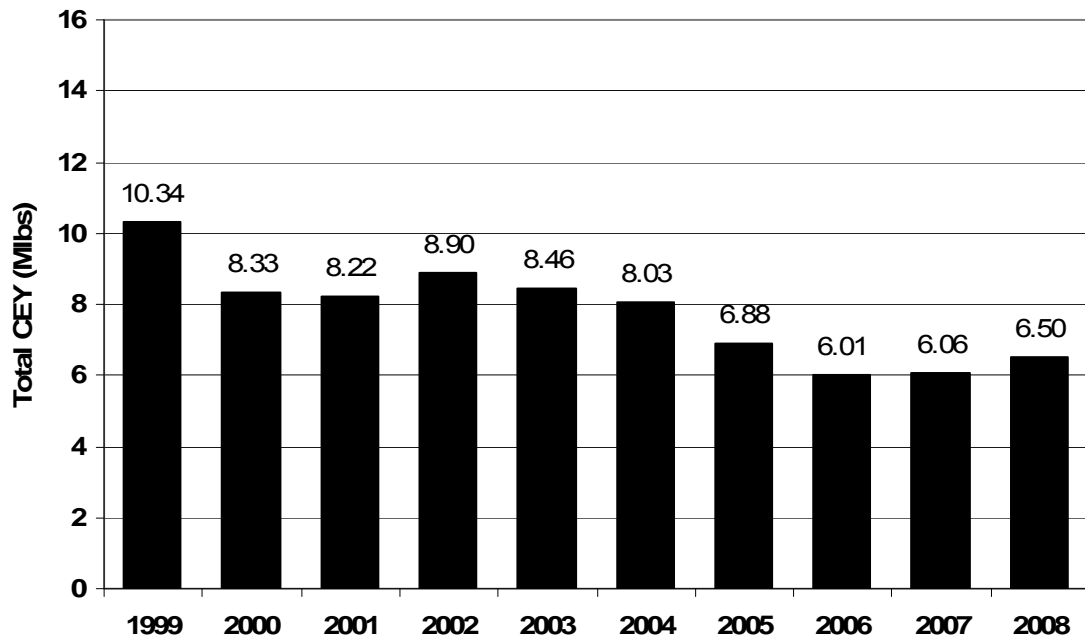


Figure 5 Area 2C Total Constant Equilibrium Yield (CEY), 1999–2008. (Source: IPHC)

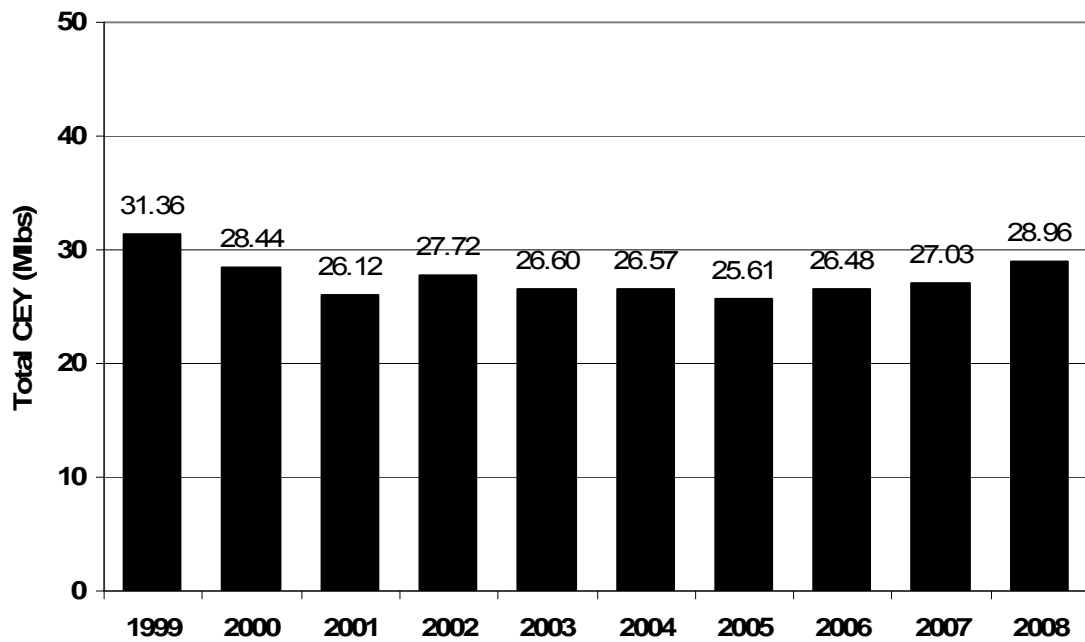


Figure 6 Area 3A Total Constant Equilibrium Yield (CEY), 1999–2008. (Source: IPHC)

The IPHC staff continues to recommend a slow rate of increase in catch limits when estimated CEY is increasing and a more rapid reduction of catch limits when CEY is decreasing.

The IPHC staff presented CEY and combined catch limit projections for Areas 2C and 3A for 2008–2015 after the April 2008 Council meeting (Table 9 and Table 10)<sup>39</sup>. At that time, the IPHC projected that halibut biomass would increase through 2015, with the following caveats and assumptions (B. Leaman, IPHC, personal communication). The apportionments to respective areas would remain unchanged. The projections were based on the most current survey apportionment distributions. While these distributions were unlikely to remain static in the foreseeable future, the expected annual changes would likely be small. Perhaps more importantly, however, is that the projections assumed that annual area removals were held to the specified level resulting from a 20 percent harvest rate. Past performance suggested this may be difficult to achieve unless the United States and Canada manage to their domestic charter halibut harvest targets.

The projections presented in Table 9 and Table 10 are outdated because they were completed in 2008 and IPHC staff have not prepared additional projections since then. Actual exploitable biomass and CEY in Areas 2C and 3A was lower than the projections in each year since 2009. For example, the 2011 actual CEY was approximately 40 percent lower than the projected CEY in Area 2C. The actual 2011 CEY was approximately 43 percent lower than the projected CEY in Area 3A. Thus, it is likely that actual exploitable biomass and CEY amounts will be lower than the IPHC projections for 2012 through 2015 presented in Table 9 and Table 10.

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<sup>39</sup> The high R projections assume that average recruitment (incoming age 6 year classes) will be one standard deviation below the 1996–2004 average. The low R projections assume that average recruitment (incoming age 6 year classes) will be one standard deviation above the 1996–2004 average.

**Table 9 Area 2C projections (Mlb) of halibut biomass, yield, catch limits, and harvest (2008 through 2015) and actual CEY (2008 through 2011). Source: IPHC Staff**

Year	Projected Exploitable Biomass	Projected Target Harvest Rate	Projected CEY	Actual CEY	Projected Other Removals	Projected FCEY	Projected Catch Limit (year-1)	Projected Catch Limit	Projected Realized Harvest Rate
<b>Low R Projections</b>									
2008	32.4	0.2	6.5	<b>6.5</b>	1.654	4.8		7.91	0.30
2009	36.8	0.2	7.4	<b>5.6</b>	1.654	5.7	7.91	6.81	0.23
2010	41.8	0.2	8.4	<b>5.0</b>	1.654	6.7	6.81	6.76	0.20
2011	46.4	0.2	9.3	<b>5.4</b>	1.654	7.6	6.76	7.05	0.19
2012	49.9	0.2	10.0		1.654	8.3	7.05	7.47	0.18
2013	51.6	0.2	10.3		1.654	8.7	7.47	7.87	0.18
2014	51.7	0.2	10.3		1.654	8.7	7.87	8.15	0.19
2015	50.2	0.2	10.0		1.654	8.4	8.15	8.23	0.20
<b>Average R Projections</b>									
2008	32.5	0.2	6.5	<b>6.5</b>	1.654	4.8		7.91	0.29
2009	36.8	0.2	7.4	<b>5.6</b>	1.654	5.7	7.91	6.81	0.23
2010	41.8	0.2	8.4	<b>5.0</b>	1.654	6.7	6.81	6.76	0.20
2011	46.5	0.2	9.3	<b>5.4</b>	1.654	7.7	6.76	7.06	0.19
2012	50.4	0.2	10.1		1.654	8.4	7.06	7.51	0.18
2013	52.8	0.2	10.6		1.654	8.9	7.51	7.98	0.18
2014	53.9	0.2	10.8		1.654	9.1	7.98	8.36	0.19
2015	53.6	0.2	10.7		1.654	9.1	8.36	8.60	0.19
<b>High R Projections</b>									
2008	32.4	0.2	6.5	<b>6.5</b>	1.654	4.8		7.91	0.30
2009	36.8	0.2	7.4	<b>5.6</b>	1.654	5.7	7.91	6.81	0.23
2010	41.9	0.2	8.4	<b>5.0</b>	1.654	6.7	6.81	6.76	0.20
2011	46.7	0.2	9.3	<b>5.4</b>	1.654	7.7	6.76	7.07	0.19
2012	50.9	0.2	10.2		1.654	8.5	7.07	7.55	0.18
2013	54.0	0.2	10.8		1.654	9.1	7.55	8.09	0.18
2014	56.1	0.2	11.2		1.654	9.6	8.09	8.58	0.18
2015	57.0	0.2	11.4		1.654	9.8	8.58	8.97	0.19



**Table 10 Area 3A projections (Mlb) of halibut biomass, yield, catch limits, and harvest (2008 through 2015) and actual CEY (2008 through 2011). Source: IPHC**

Year	Projected Exploitable Biomass	Projected Target Harvest Rate	Projected CEY	Actual CEY	Projected Other Removals	Projected FCEY	Projected Catch Limit (year-1)	Projected Catch Limit	Projected Realized Harvest Rate
<b>Low R Projections</b>									
2008	144.3	0.2	28.9	<b>29.0</b>	3.061	25.8		27.62	0.21
2009	164.0	0.2	32.8	<b>29.0</b>	3.061	29.7	27.62	28.33	0.19
2010	186.2	0.2	37.2	<b>28.0</b>	3.061	34.2	28.33	30.28	0.18
2011	206.7	0.2	41.3	<b>26.2</b>	3.061	38.3	30.28	32.94	0.17
2012	222.1	0.2	44.4		3.061	41.4	32.94	35.75	0.17
2013	230.1	0.2	46.0		3.061	43.0	35.75	38.15	0.18
2014	230.5	0.2	46.1		3.061	43.0	38.15	39.78	0.19
2015	223.9	0.2	44.8		3.061	41.7	39.78	40.43	0.19
<b>Average R Projections</b>									
2008	144.8	0.2	29.0	<b>29.0</b>	3.061	25.9		27.62	0.21
2009	164.0	0.2	32.8	<b>29.0</b>	3.061	29.7	27.62	28.33	0.19
2010	186.3	0.2	37.3	<b>28.0</b>	3.061	34.2	28.33	30.29	0.18
2011	207.4	0.2	41.5	<b>26.2</b>	3.061	38.4	30.29	33.00	0.17
2012	224.4	0.2	44.9		3.061	41.8	33.00	35.94	0.17
2013	235.4	0.2	47.1		3.061	44.0	35.94	38.63	0.18
2014	240.2	0.2	48.0		3.061	45.0	38.63	40.74	0.18
2015	239.0	0.2	47.8		3.061	44.7	40.74	42.08	0.19
<b>High R Projections</b>									
2008	144.3	0.2	28.9	<b>29.0</b>	3.061	25.8		27.62	0.21
2009	164.0	0.2	32.8	<b>29.0</b>	3.061	29.7	27.62	28.33	0.19
2010	186.5	0.2	37.3	<b>28.0</b>	3.061	34.2	28.33	30.30	0.18
2011	208.1	0.2	41.6	<b>26.2</b>	3.061	38.6	30.30	33.05	0.17
2012	226.7	0.2	45.3		3.061	42.3	33.05	36.12	0.17
2013	240.6	0.2	48.1		3.061	45.1	36.12	39.11	0.18
2014	249.8	0.2	50.0		3.061	46.9	39.11	41.70	0.18
2015	254.1	0.2	50.8		3.061	47.8	41.70	43.72	0.18

The 2011 coastwide assessment indicates that the exploitable biomass of halibut has declined approximately 50% over the past decade. This declining trend is seen in almost all of the area-specific survey and commercial harvest indices. However, the 2011 stock assessment (Hare 2010) noted that these indices have begun to increase in several areas.

In Area 2C, all indices are consistent with a steadily declining exploitable biomass up to at least 2007. There are two likely reasons for the decline. The first is the passing through of the 1987 and 1988 halibut year classes that were very large in comparison to the surrounding year classes. Now that those two year classes are 20 years old, their contribution to the exploitable biomass and catches has sharply declined and the drop in biomass was to be expected as they are replaced by year classes of lesser magnitude. Second, realized harvest rates were substantially higher than the target rate of 20%, and for a few years were in excess of 50% of the exploitable biomass.

Harvest rates have been brought down from peak levels in Area 2C, but removals have been generally larger than surplus production and that has stalled rebuilding of regional stocks. The reduced removals now appear to have arrested decline of the regional biomass and Area 2C appears to have stabilized at a low level that limits available yield, which has resulted in lower commercial catch limits. There are

multiple signs that two or three large year classes are set to enter the exploitable biomass, though this is dependent both on reducing harvest rates that are above target as well as on the growth rate.

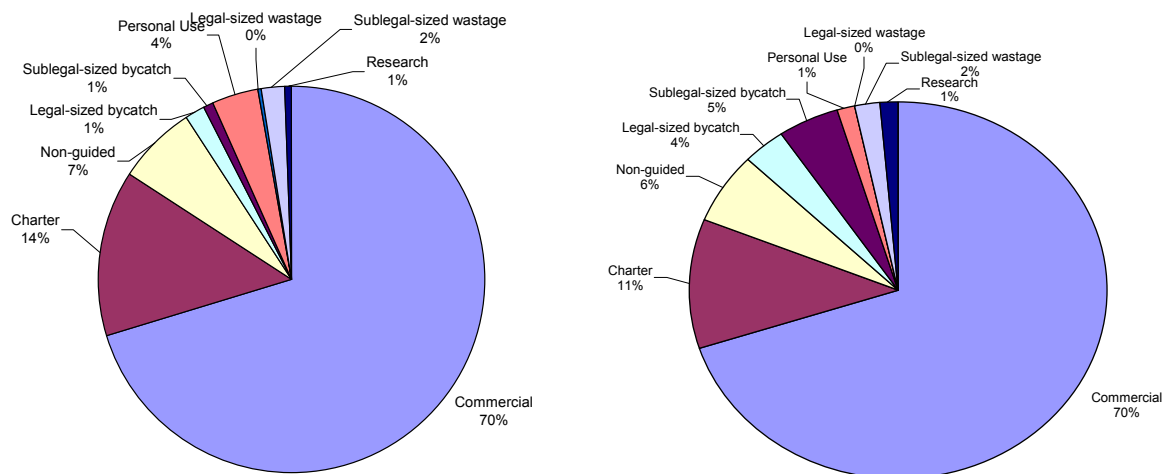
The Area 3A survey and commercial harvest indices have now shown five consecutive years of decline. The exploitable biomass in Area 3A has also declined steadily since 2005. Area 3A also benefited from the very large year classes of 1987 and 1988 and the slow decline in exploitable biomass is the result of those year classes dying off. The IPHC also noted that the exploitable biomass declines of the past several years are a sign that exploitation rates may be too high. Until the biomass decline has ended, the IPHC's recommended catch limits will trend downwards in Area 3A.

Additional detailed descriptions of surveys, stock assessments, and research on halibut can be found in the 2010 Report of Assessment and Research Activities (IPHC 2010). The management, production history, and life history of halibut are further described in section 3.7.2 of the SEIS (NMFS 1998) and the 2009 IPHC annual report (IPHC 2009).

Pacific halibut is fully utilized in Area 2C and Area 3A. Three major categories of use occur in Alaska for halibut: commercial, sport, and subsistence (Figure 7). Commercial harvests account for the largest portion of total use in Area 2C, comprising approximately 54 percent of the removals in 2010, not including approximately 7 percent of bycatch and wastage. Sport users are divided into two subcategories: guided (charter) and non-guided. Approximately 16 percent of the total removals come from the charter sector and 16 percent from the non-guided sector in 2010. Subsistence (also called personal use) comprises the smallest portion at 6 percent of the total removals. Wastage removals represent the mortality of legal-sized halibut due to lost or abandoned gear, and of sublegal-sized halibut discarded in the halibut fishery. Since the implementation of the QS fisheries in the 1990s, the total mortality of legal-sized halibut from lost gear in all areas has remained under 0.5 Mlb annually. Bycatch mortality accounts for halibut that die from being caught in other fisheries. The 2010 bycatch mortality estimate of 0.34 Mlb in Area 2C is similar to the estimates for the last several years (Table 11). Removals in Area 2C totaled approximately 8.1 Mlb in 2010.

Commercial harvests also account for the largest portion of total use in Area 3A, comprising approximately 67 percent of the removals in 2010. Approximately 10 percent of the total removals come from the charter sector and 7 percent from the non-guided sector in 2010. Subsistence comprises the smallest portion at 1 percent of the total removals. The Area 3A 2010 wastage removals were approximately 5 percent of total removals. The 2010 bycatch mortality estimate of 2.7 Mlb in Area 3A was approximately 9 percent of total removals. Removals in Area 3A totaled approximately 29.9 Mlb in 2010.

The bycatch categories in Table 11 include legal and sub-legal mortalities. The legal mortality category is composed of halibut caught in the non-halibut commercial fishery that are discarded, but are of at least 32 inches in length. Sub-legal halibut are those discarded in the commercial fisheries that are less than 32 inches in length.



**Figure 7** Five-year average (2002–2006) proportion halibut removed by category in Area 2C (left) and Area 3A (right).

**Table 11** Summary of removals by category for Area 2C and Area 3A in millions of pounds.

Year	Commercial		Research	Bycatch mortality		Wastage		Non-guided sport	Charter	Subsistence
	Quota	Catch	Catch	Legal Catch	Sub-legal Catch	Legal Catch	Sub-legal Catch	Catch	Catch	Catch
<b>2C</b>										
2003	8.50	8.29	0.12	0.17	0.17	0.03	0.10	0.85	1.41	0.17
2004	10.50	10.12	0.12	0.15	0.21	0.03	0.28	1.19	1.75	0.63
2005	10.93	10.49	0.14	0.14	0.20	0.04	0.23	0.85	1.95	0.60
2006	10.63	10.40	0.10	0.22	0.20	0.02	0.28	0.72	1.80	0.59
2007	8.51	8.34	0.15	0.21	0.13	0.02	0.27	1.13	1.92	0.58
2008	6.21	6.15	0.06	0.21	0.14	0.01	0.21	1.27	1.99	0.46
2009	5.20	4.87	0.09	0.22	0.13	0.01	0.26	1.12	1.25	0.46
<b>3A</b>										
2003	22.63	22.32	0.42	1.36	1.43	0.09	0.61	2.05	3.38	0.07
2004	25.06	24.72	0.45	1.52	2.08	0.07	0.67	1.94	3.67	0.28
2005	25.47	25.23	0.81	1.32	1.81	0.08	0.57	1.98	3.69	0.43
2006	25.20	25.24	0.47	1.43	1.62	0.05	0.70	1.67	3.66	0.36
2007	26.20	25.96	0.35	0.99	1.78	0.05	0.92	2.28	4.00	0.38
2008	24.22	24.17	0.36	1.06	2.01	0.06	0.92	1.94	3.38	0.34
2009	21.70	21.39	0.36	1.07	1.92	0.04	1.12	2.02	2.73	0.33

### Commercial removals

The original groundfish fishery management plan for the Gulf of Alaska designated Pacific halibut as a prohibited species to any new commercial development due to its historical usage by the longline (or setline) fishery. The commercial 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 6 and November 15 in 2010. Total setline CEY for Alaska waters is estimated to be 33 Milb in 2011, which indicates the halibut resource is robust. In Area 2C, the fishery CEY has ranged from 2.3 Milb to 7.6 Milb during the

last five years. The fishery CEY has ranged from 14.4 Milb to 28.2 Milb in Area 3A during the same period.

Halibut begin recruiting to longline gear at approximately 60 cm in length, but the commercial 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 catch in 1996 was between 9 kg and 20 kg depending on the area caught; the average age was 12 years (Forsberg 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 fishery to operate during a long period which has had the ancillary effect 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 fishery 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 federal Fishery Management Plan for Groundfish in the Gulf of Alaska (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. These management measures are discussed further in the following documents:

- Sections 3.6.1 and 3.6.2 of the GOA Groundfish FMP (NPFMC 2005<sup>40</sup>) cover management of the bycatch of halibut in the groundfish fisheries.
- Section 3.5 of the PSEIS (NMFS 2004<sup>41</sup>) reviews the effects of the groundfish fishery on halibut; and
- Charter 7 of the Alaska Groundfish Harvest Specification EIS (NMFS 2007<sup>42</sup>) provides an overview of prohibition species catch management, including halibut bycatch.

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 allocations are taken. As a result, fishing mortality has remained relatively constant; with the total amounts depending on the type of fisheries being prosecuted and total effort. Bycatch and wastage have accounted for approximately 4 percent of the total removals in Area 2C and 11 percent of the total removals in Area 3A.

In April 2011, the Council initiated analyses to consider reducing the halibut bycatch limits, or prohibited species catch limits, in the Gulf of Alaska. The Council is evaluating a 5-15% reduction in the limits currently established for trawl and fixed gear fisheries. The Council cited both 1) conservation of the halibut resource and 2) allocation impacts on commercial, sport, and subsistence fisheries as the purpose for the proposed action. The Council has indicated it may consider developing a comprehensive FMP/regulatory amendment for actions to reduce halibut bycatch by all sectors and gear types engaged in GOA groundfish fisheries for future years.

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<sup>40</sup> <http://www.fakr.noaa.gov/sustainablefisheries/seis/intro.htm>

<sup>41</sup> <http://www.alaskafisheries.noaa.gov/sustainablefisheries/seis/intro.htm>

<sup>42</sup> <http://alaskafisheries.noaa.gov/analyses/specs/eis/default.htm>

The catch limit for the commercial halibut longline fishery is set once all other removals are deducted from the available yield. The increase in charter removals results in a reduction of the commercial 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 fishery set in 2011 includes historical sport harvest from 2010, but the 2011 sport harvest is unknown. Thus, an increase of sport harvest above the level predicted in 2010 is accounted for in future commercial quotas. From 2008 through 2011, the IPHC used the GHL as an estimate of charter halibut harvest removals. Over the long-term, GHL overages are 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 to set an allocation for each sector.

### 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 the 2009 IPHC annual report (IPHC 2009), 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 2008 more than doubled in Area 2C (from 986,000 to 1,999,000 lb), but declined from 2008 levels to approximately 1,250,000 pounds in 2009 and 2010. In 2010, charter halibut harvests accounted for approximately 16 percent of the average halibut removals.

Regulations by both federal and state agencies affect the halibut fishery. Federal sport fishing regulations are found at 50 CFR 300.62. The 2011 annual measures for halibut fisheries were published at 76 FR 14300, Part 25. The GHL regulations are published at 50 CFR 300.65. Federal regulations require the following:

- The daily bag limit is two halibut with four in possession in unless a more restrictive bag limit applies in Federal regulations at 50 CFR 300.65;
- In Area 2C, no person on board a charter vessel referred to in 50 CFR 300.65 and fishing in Regulatory Area 2C shall take or possess any halibut that: (a) With head on, is longer than 37 inches (93.9 cm) as measured in a straight line, passing over the pectoral fin from the tip of the lower jaw with mouth closed, to the extreme end of the middle of the tail; and (b) If the halibut is filleted the entire carcass, with head and tail connected as a single piece, must be retained on board the vessel until all fillets are offloaded.
- The sport fishing season is from February 1 to 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; and
- 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 seasons and reporting requirements for the charter fishery are listed below.

- Anglers must have a current year's Alaska sport fishing license, with 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; or
  - Alaska resident disabled veterans (50 percent 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 fishery has a certain level of catch-and-release mortality, which results from physiological injury, stress, or handling. The mortality rate may be cumulative in some high-use fisheries 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) provides a brief discussion of release mortality as it relates to Pacific halibut. This discussion was provided in Appendix A to NMFS (2007). Meyer (2007) estimated that the release mortality rate for Pacific halibut was approximately 5 percent in Area 2C, which means approximately 5 percent of halibut caught and released die soon after being caught.

#### Subsistence removals

The distinctions between sport and subsistence are clouded by differing legal and cultural interpretations by both resource managers and users, although current gear restrictions may be used after the fact to assign a user category to a landing. 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"). Federal regulations now recognize and define a legal subsistence fishery for halibut in Alaska (70 FR 16742, April 1, 2005). Subsistence halibut removals totaled 0.88 Milb (net weight) in 2009 (Fall et al. 2011) from 11,733 permit holders. Subsistence harvests represented about 1.2 percent of the total halibut removals in Alaska in 2009. Subsistence/personal use harvest in Area 2C and Area 3A has remained relatively stable during the last three years (Table 11). Subsistence harvest is tracked by ADF&G using survey respondent methods, including public outreach, mailed household surveys, and community visits. Fall et al. 2011 provides a detailed description of the survey methods and response rates. Subsistence fishery regulations are found at 50 CFR 300.60–300.66.

**Effect of alternatives:** The proposed alternatives address resource allocation issues to more closely align charter harvest with the IPHC objective to promote optimum yield for the halibut fisheries. No significant adverse impacts on the halibut stock are identified for the any of the alternatives considered. The alternatives considered for this action could change the amount of halibut available for harvest by the charter and commercial halibut fisheries and the amount of halibut harvested in the charter and commercial halibut fisheries. However, the preferred alternative would not affect overall harvest levels of halibut by all sectors, fishing practices of individuals participating in the halibut fishery, or the health of the halibut stock. Total removals from the halibut resource are set by the IPHC at a level determined to be sustainable.

The Council recommended charter allocations that vary with the abundance of halibut stocks under Alternative 2 and the preferred alternative. While the Council considered establishing fixed poundage allocations to the charter sector under Alternative 2, Option 2, the Council determined that use of allocations that vary with halibut stock abundance would establish a clear allocation between the charter and commercial halibut sectors. The calculation of sector catch limit would be a simple calculation and both the commercial and guided sport sector allocations adjust directly with changes in halibut exploitable biomass.

The status quo alternative would continue management of charter harvest under the GHM program. While the GHM serves as a target harvest level for the charter sector, it does not include accompanying harvest restrictions to limit charter harvest to the GHM. Alternative 2 would establish a charter sector allocation and a suite of potential management measures to limit charter halibut harvest to the sector allocation, however separate regulatory action would have to be taken to limit charter harvest after a charter overage occurred. Alternative 2 would maintain what has been described as a “delayed feedback loop” for managing charter halibut fisheries in Area 2C and Area 3A under the status quo alternative. Under the status quo and Alternative 2, three to four years may elapse between the time in which (1) a charter harvest overage occurs; (2) ADF&G reports that an overage has occurred; (3) the Council selects a preferred alternative to address the overage; and (4) new regulations are in effect. The halibut resource could be negatively impacted under the status quo and Alternative 2 if charter harvest overages continue to occur during the delayed feedback loop.

The preferred alternative removes the delayed feedback loop by annually implementing charter harvest restrictions that are based on halibut stock estimates, catch limits established by the IPHC, and charter harvest projections for the upcoming year. These harvest restrictions are intended limit projected charter halibut harvest to that sector’s allocation. The management measures specified under the preferred alternative are more restrictive at lower levels of halibut stock abundance to ensure that charter harvest is closely aligned with the sector allocation. The most restrictive management measure under the preferred alternative limits charter anglers to retaining one halibut per day of a maximum length limit. The maximum length would be calculated specifically to enable anglers to retain the largest halibut possible while limiting charter harvest to the sector allocation. The maximum length limit calculation would use conservative assumptions about projected charter harvest to establish a length limit that would limit charter harvest equal to or below the sector allocation.

The Council considered methods that would reduce the time between a charter allocation overage and implementation of regulations to eliminate the overage, under Element 4 of Alternative 2. The Council determined that preferred alternative would be more likely to limit the charter halibut fishery to its catch limit over time than the status quo and the options considered Alternative 2 because the preferred alternative would eliminate the delayed feedback loop. The preferred alternative likely would have a more beneficial impact on halibut stocks in Area 2C and Area 3A than the status quo alternative and Alternative 2 because the pre-season implementation of charter harvest restrictions would be more timely and responsive to changes in halibut abundance. Because the preferred alternative anticipates that only the amount of halibut supported by annual halibut exploitable biomass is removed from the water, the preferred alternative promotes conservation of the halibut stock.

## **Groundfish**

In the charter fishery, 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 (S. Meyer, ADF&G Sportfish Division, personal communication). 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 conducted, and it may be impossible

given the lack of information. It is likely that harvest of State-managed species would increase if the halibut stock declines in abundance or if the charter halibut allocation is less than demand.

A regulatory measure to restrict halibut harvest to either the GHL, under the No Action Alternative, or under any of the proposed allocation options under Alternative 2 and Alternative 3, the preferred alternative, would have the same effect as 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 fishery that may occur under the options under Alternative 2 or Alternative 3.

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 at which a rockfish was caught, handling and release techniques, etc.

The 2007 SAFE (NMFS 2007) summarized an action taken by the State of Alaska Board of Fisheries (BOF) in February 2006 that allocated the demersal shelf rockfish complex (DSR) in the Southeast Outside management area between the sport fishery (unguided and charter) and the commercial fishery (directed DSR and directed halibut) in 2006. A daily bag limit of three non-pelagic rockfish, of which only one could be a yelloweye rockfish, with a possession limit of six fish of which only two may be a yelloweye rockfish, was established for both resident and nonresident unguided and charter sport anglers in Southeast Alaska. All non-pelagic rockfish caught had to be retained until the bag limit was reached. Non-resident unguided and charter sport anglers also had an annual limit of three yelloweye rockfish. Charter operators and crew members could not retain non-pelagic rockfish while clients were on board the vessel. The 2008 OFL for DSR is 650 mt, and the ABC and TAC are 410 mt. Under the BOF decision, 84 percent of the TAC (344 mt) was allocated to the commercial fishery and the remaining 16 percent (66 mt) was allocated to unguided and charter sport fishermen. The TAC

The 2010 SAFE report (NPFMC 2006b) indicated that a only the Sothern Southeast Outside (SSEO) waters management area was opened to a directed DSR fishery in 2010, as the TAC apportioned to other management areas was insufficient to conduct and adequately manage a directed fishery. In SSEO, a total of 30.3 mt was available to the directed commercial DSR fishery, 29.5 mt of which were harvested. Commercial halibut fishermen took an incidental catch of 162 mt of DSR. Approximately 52 mt of DSR were harvested in the charter and unguided sport fishery, with 4 mt released. The unguided and guided sport fishery exceeded its allocation by about 9 mt, while the commercial DSR and halibut fisheries took significantly less than the commercial DSR allocation. Combined, the two commercial fisheries removed approximately 252 mt of DSR, which was 84 percent of the 300 mt combined TAC.

Unguided and guided sport anglers targeting halibut also catch pelagic shelf rockfish (PSR) 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 are under its respective OFL and ABC in 2011. The ABC for the assemblage in the western Yakutat region and Eastern Alaska/Southeast Outside district was 1,160 mt in 2010 and 1,091 mt in 2011. The commercial catch totaled 86 mt in 2010, which was below the TAC which is set equal to the ABC. The 2010 OFL was 6,142 mt for the GOA, with 2,865 mt of commercial catch for the entire GOA. Harvest in the unguided and guided sport fishery targeting halibut is not at a level high enough to cause PSR to exceed the OFL. An increase in sport harvest may constrain the commercial fishery; however, rockfish stocks would still be managed within their biological



benchmarks. For the previously described reasons, the impact of the preferred alternative is likely to be insignificant for PSR stocks.

The impacts of the alternatives on rockfish removals are difficult to project, because behavioral changes under a new restrictive halibut harvest policy are unknown. Due to lack of data, it is unknown whether a shift in halibut removals between the commercial and charter sectors under the proposed alternative would result in a proportionate shift in rockfish or ling cod removals. 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.

Lingcod is also a commercial and sport fishery target species. Harvest levels in recent years have remained constant under strict sport fishery slot limit regulations and seasons, and commercial quota limits (Table 12). A harvest increase in the sport sector resulting from the alternatives would likely be small given the existing regulatory constraints.

**Effect of alternatives:** Demersal shelf rockfish (DSR, e.g., yelloweye rockfish), pelagic shelf, and lingcod are species commonly harvested in the sport fishery. Commercial and sport catch limit limits are set for these species and none of the catches of these species exceeded their respective ABC or OFL in 2010. DSR and pelagic shelf rockfish harvest in 2010 was well under the OFL, ABC, and TAC for the commercial and sport fisheries combined.

**Table 12** 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	57,381	16,281	38,722	11,047
2006	51,847	12,237	40,306	13,542

Source: ADF&G, Statewide Harvest Survey data.

Harvest levels for lingcod in recent years have remained constant under strict sport fishery slot limit and season regulations, and commercial quota limits. A small increase in lingcod harvest would have an insignificant impact on the stock, because of ADF&G regulations for the sport and commercial sectors. For these reasons, the impact of the alternatives on these species is expected to be insignificant.

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 would 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 for Area 2C. 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.

## **Impacts on 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 the listing of a 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, that 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 fishery off Alaska (which uses gear unlikely to generate bycatch of finfish, seabirds or marine mammals) would 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 compose a measurable portion of their diet. No interactions between the charter halibut fisheries and any listed species have been reported.

Table 13 identifies the species listed as endangered and threatened under the ESA.

**Table 13 ESA listed and candidate species that range into the BSAI and GOA groundfish management areas.**

Common Name	Scientific Name	ESA Status
Blue Whale	<i>Balaenoptera musculus</i>	Endangered
Bowhead Whale	<i>Balaena mysticetus</i>	Endangered
Fin Whale	<i>Balaenoptera physalus</i>	Endangered
Humpback Whale	<i>Megaptera novaeangliae</i>	Endangered
Right Whale <sup>1</sup>	<i>Balaena glacialis</i>	Endangered
Sei Whale	<i>Balaenoptera borealis</i>	Endangered
Sperm Whale	<i>Physeter macrocephalus</i>	Endangered
Steller Sea Lion (Western Population)	<i>Eumetopias jubatus</i>	Endangered
Steller Sea Lion (Eastern Population)	<i>Eumetopias jubatus</i>	Threatened
Chinook Salmon (Lower Columbia R.)	<i>Oncorhynchus tshawytscha</i>	Threatened
Chinook Salmon (Upper Columbia R. Spring)	<i>Oncorhynchus tshawytscha</i>	Endangered
Chinook Salmon (Upper Willamette)	<i>Oncorhynchus tshawytscha</i>	Threatened
Chinook Salmon (Snake River spring/summer)	<i>Oncorhynchus tshawytscha</i>	Threatened
Chum Salmon (Hood Canal Summer run)	<i>Oncorhynchus keta</i>	Threatened
Coho Salmon (Lower Columbia R.)	<i>Oncorhynchus kisutch</i>	Threatened
Steelhead (Snake River Basin)	<i>Oncorhynchus mykiss</i>	Threatened
Steller's Eider <sup>2</sup>	<i>Polysticta stelleri</i>	Threatened
Short-tailed Albatross <sup>2</sup>	<i>Phoebastria albatrus</i>	Endangered
Spectacled Eider <sup>2</sup>	<i>Somateria fishcheri</i>	Threatened
Kittlitz's Murrelet <sup>2</sup>	<i>Brachyramphus brevirostris</i>	Candidate
Northern Sea Otter <sup>2</sup>	<i>Enhydra lutris</i>	Threatened
Olive Ridley turtle	<i>Lepidochelys olivacea</i>	Threatened/Endangered
Loggerhead turtle	<i>Caretta caretta</i>	Threatened
Green turtle	<i>Chelonia mydas</i>	Threatened/Endangered
Leatherback sea turtle	<i>Dermochelys coriacea</i>	Endangered
<sup>1</sup> NMFS designated critical habitat for the northern right whale on July 6, 2006 (71 FR 38277). <sup>2</sup> 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). Critical habitat has been established for the northern sea otter (74 FR 51988, October 8, 2009).		

### Impacts on Seabirds

Because halibut fisheries are federally regulated activities, any negative effects of the fisheries on listed species or critical habitat and any takings<sup>43</sup> 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 (NMFS 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.

<sup>43</sup> 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)).

In addition to those species listed under the ESA, other seabirds occur in Alaskan waters that may interact with halibut fisheries. The most numerous seabirds in Alaska are northern fulmars, storm petrels, kittiwakes, murre, 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 Alternative 2 and Alternative 3 would limit charter halibut removals and any associated bycatch, although seabirds are not a known incidental harvest in this fishery. A likely result of Alternative 2 and Alternative 3 is that commercial halibut harvests may increase if charter halibut removals are reduced. The commercial halibut fishery is subject to strict seabird avoidance requirements.<sup>44</sup> None of the alternatives would affect takes of listed species and therefore, none of the alternatives is 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 fishery action. Although commercial halibut harvests may increase under either Alternative 2 or Alternative 3, this harvest is unlikely to increase to a level beyond that already analyzed. 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.

### **Impacts on Marine Mammals**

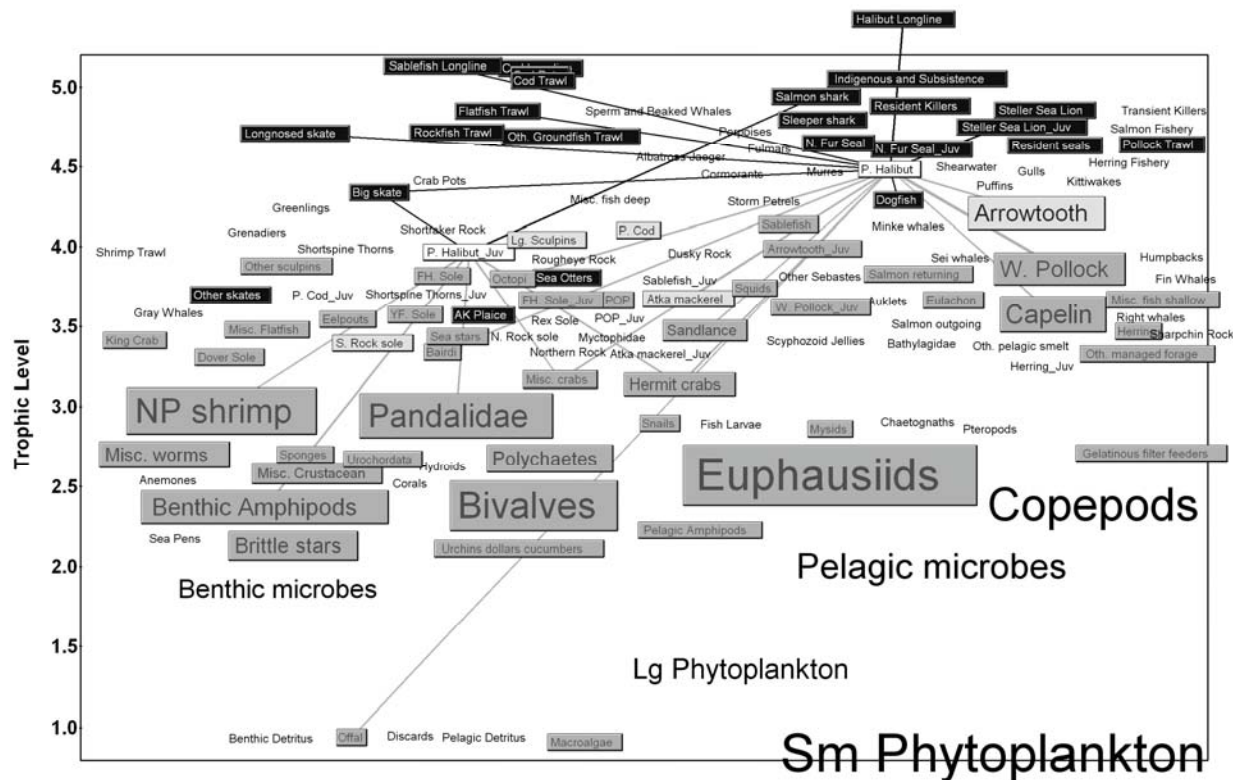
The charter halibut fishery in the EEZ of Alaska is classified under the Marine Mammal Protection Act as a Category III fishery, that is, one that interacts only with non-strategic stocks and whose level of take has insignificant impact on the stocks. No takes of marine mammals by the charter halibut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

### **Impacts on 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, NMFS Alaska Fisheries Science Center, personal communication). 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 comes from fishing because they have few natural predators, especially as adults (Figure 8).

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<sup>44</sup> <http://www.alaskafisheries.noaa.gov/protectedresources/seabirds/guide.htm>



**Figure 8** Food web that depicts halibut in white boxes (on left for juvenile halibut and on right for adult halibut), their predators and fisheries in black (above halibut), their prey in dark grey (below halibut) and species that are both predators and prey in light grey (in proximity to halibut). The sizes of the boxes represent the relative biomass of species/groups.

Halibut harvests by the charter fishery, as well as all other fishery 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 fishery. However, given the nature of the action, the presumed effects of the alternatives on the ecosystem are insignificant because the alternatives would not significantly alter the amount of these species harvested, fishing methodology, areas fished, seasons fished, or fishing intensity.

### Impacts on the Social and Economic Environment

A description of the charter halibut fishery and detailed discussions of the socioeconomic impacts of the alternatives may be found in the RIR in chapter 7. Chapter 8 contains the IRFA, conducted to evaluate the

impacts of the suite of potential alternatives being considered, including the preferred alternatives, on small entities, in accordance with the provisions of the RFA.

Alternative 2 (with the exception of Alternative 2, Option 2 with no suboptions selected) and Alternative 3 (preferred alternative) establish charter sector halibut allocations that vary with halibut stock abundance. These charter allocations could result in a reduction in the amount of halibut harvested in the charter fishery compared to Alternative 1 (status quo alternative), particularly at low to moderate levels of halibut abundance. Reduced charter harvests could result in revenue reductions for charter operators from reduced demand for charter vessel fishing trips. However, as discussed in RIR, the opportunity to take halibut is not the only factor affecting the demand for guided saltwater sport charters, and the demand for charter trips could decline even without additional charter harvest restrictions. Charter vessel anglers may be negatively impacted by charter harvest restrictions implemented under Alternative 2 and the preferred alternative because anglers may derive less satisfaction from charter vessel fishing trips on which they can retain a few number of halibut and/or halibut of a smaller size.

Charter harvest could increase relative to the status quo at higher levels of halibut abundance under Alternative 2 and the preferred alternative because the charter sector allocations vary with halibut abundance. An increased charter allocation is expected to economically benefit charter operators by increased revenue if angler demand for charter trips increases owing greater angling opportunities for retaining more and/or larger halibut on charter vessel fishing trips.

Under Alternative 2 and the preferred alternative, the Council attempted to mitigate the impacts of the initial allocation on the charter sector at all levels of halibut abundance by allowing charter limited entry permit holders to acquire additional halibut for harvest by charter anglers from the commercial sector through financial compensation. Charter clients who fish with these permit holders would be allowed to fish under regulations for non-guided anglers.

## **1.11 Cumulative Effects**

Effects of an action can be direct or indirect. According to the definition in the Council on Environmental Quality (CEQ) regulations (40 CFR 1500.1) 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, “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” (Bass et al. 2001:55).

The alternatives under consideration in this analysis are designed to limit halibut harvests in the charter fishery. Any direct effects or reasonably foreseeable indirect environmental effects from the action would be minor, as explained in the EA. The action under any of the alternatives would not significantly change the total amount of halibut harvested and would not entail changes in halibut stock levels. Any environmental effects caused by a change in halibut fishery management under the status quo alternative, Alternative 2, and Alternative 3 are so minor as to make it difficult to reasonably predict further indirect effects of those changes.

A charter halibut LEP was adopted by the Council in March 2007 and was implemented in 2010. Permits were issued in late 2010 and early 2011 and beginning on February 1, 2011, charter halibut operators were required to have a permit on board the vessel for each charter vessel fishing trip on which anglers retain halibut. In addition to issuing permits to apparently qualified charter operators, NMFS issued a number of “interim” charter halibut permits to charter operators who did not appear to meet the qualification criteria but have submitted an appeal to the agency to receive one or more permits. Thus, the pool of LEP holders will not be known until all appeals are resolved, likely later in 2011. A possible future action under consideration by the Council includes the development of a share-based allocation

program to individual charter LEP holders. The Council chose to take no action on revising management measures in Area 3A, despite a nearly 10 percent overage, because of its newly adopted CSP policy (the Preferred Alternative in this analysis).

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 GOA. While future actions related to this action may result in impacts, these actions depend upon future decisions by the Council, which are also subject to NEPA, as appropriate. For all future actions pursuant to NEPA, the appropriate environmental analysis documents would be prepared to inform the decision makers of potential impacts to the human environment and to implement mitigation measures to avoid significant adverse impacts. Thus, no reasonably foreseeable future actions would have impacts that would cause significant cumulative effects when combined with the effects from this action.

## **SUMMARY**

The proposed alternatives address allocation of the Pacific halibut resource between the commercial setline and charter sectors. While the preferred alternative would affect harvest levels and fishing practices of individuals participating in both sectors, overall halibut removals would not be affected. The IPHC factors known resource removals into the halibut stock assessment when setting annual commercial longline catch limits. Therefore, none of the proposed alternatives is expected to significantly impact the halibut stock. However, by creating an annual pre-season determination of charter harvest restrictions for the upcoming year, the preferred alternative potentially could have a beneficial effect on halibut stocks compared to the status quo and Alternative 2 by more closely aligning charter harvest to target levels, particularly at lower levels of halibut stock abundance.

None of the alternatives considered is expected to affect the physical environment, benthic community, marine mammals, seabirds, or non-specified groundfish species. The data are insufficient to evaluate whether groundfish stocks may be affected by the preferred alternative. There may be an effect on the human environment as there are winners and losers under any sector allocation. At moderate to low levels of halibut abundance, the preferred alternative could provide the charter sector with a smaller poundage catch limit than it would have received under the status quo alternative or under Alternative 2, Option 2, which would establish a fixed poundage charter sector allocation. Conversely, at higher levels of abundance, the preferred alternative could provide the charter sector with a larger poundage catch limit than it would have received under the status quo alternative or Alternative 2, Option 2.

The Council attempted to mitigate the impacts of the initial allocation on the charter sector by recommending charter allocations that vary with the abundance of halibut stocks. While the Council considered establishing fixed poundage allocations to the charter sector under the status quo alternative and Alternative 2, the Council determined that use of allocations that vary with halibut stock abundance balanced the needs of the guided sport and commercial sectors at all levels of halibut abundance. The calculation of sector catch limit based on the CEY would be a simple calculation and would be transparent and comprehensible to each user group. This approach is equitable for halibut fishery management because both the commercial and guided sport sector allocations adjust directly with changes in halibut exploitable biomass. Thus, both the guided sport and commercial sectors would share in the benefits and costs of managing the resource for long-term sustainability under a combined catch limit. The Council also attempted to mitigate the impacts of the initial allocation on the charter sector by allowing charter limited entry permit holders to acquire additional allocation from the commercial sector through financial compensation. Charter clients who fish with these permit holders would be allowed to fish under regulations for non-guided anglers.

## 2 Regulatory Impact Review

### 2.1 Introduction

Since the early 1990s, the Council has been developing proposals to limit harvests and establish a timely and accountable management regime for the charter halibut fisheries in Area 2C and Area 3A. Measures considered by the Council, and those that have been implemented by the Secretary of Commerce, are well documented and summarized in the EA. Regulations currently in place (one-fish bag limit in Area 2C and charter LEP program in Areas 2C and 3A) are not expected to limit charter harvests sufficiently to maintain an equitable division of halibut removals between the commercial setline IFQ sector and the charter sector.

The Council has developed this analysis to amend federal regulations to address the charter sector's future harvests. The Council addressed the need to resolve the conflicts and resulting instability between sectors in the following problem statement.

*The absence of a hard allocation between the longline and the charter halibut sectors has resulted in conflicts between sectors and tensions in coastal communities 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 the food, sport, or livelihood.*

The Council also adopted a statement of management objectives (see section 1.3). In summary, the Council intends to establish a catch sharing plan for the commercial and charter halibut sectors in Area 2C and Area 3A. It considered the charter sector's business model, which requires a stable, regulatory environment with no in-season regulatory changes, when it determined a fair and equitable allocation of the exploitable halibut resource among the commercial and charter sectors in those areas. The Council also intends that the charter sector be monitored and managed to ensure that its harvest stays within its allocation range, as the halibut commercial IFQ program constrains commercial harvests through monitoring and reporting requirements. Advance notice and predictability, with respect to limits and season length, would be provided to the charter halibut sector. Management measures to achieve these goals would not be adjusted in-season, but would occur in the first year possible after the overage. Federal and state agencies would determine the necessary management measures to constrain projected charter harvests within its allocations, and select measures prior to the start of the charter season. The Council intends to err on the side of more restrictive charter management measures, when in doubt.

The preferred alternative would require that federal regulations that define the Pacific halibut IFQ program be modified to allow the charter sector to lease commercial IFQ. This would allow the charter sector to seasonally increase its harvest above its initial allocation through inter-sector trading. The GAF Program is intended to mitigate the end of unlimited growth in charter harvests under the GHL Program, by allowing the opportunity for individual charter LEP holders to provide additional fishing opportunities to their clients.

The Council considered four approaches for setting allocations for the charter sector: three options were considered under Alternative 2; the Council selected a preferred alternative using a fourth approach. Option 1 would allocate a percentage of a combined charter and commercial catch limit to the charter sector. Option 2 would allocate a fixed number of pounds to the charter sector. Options 2a through 2c include a suboption for a stair-step under different halibut abundance levels. The charter sector would not be allocated a fixed amount of halibut if the suboption is included as part of a fixed allocation. Instead, the amount allocated would change with the CEY or combined catch limit, so the outcome more closely resembles a percentage-based allocation. Option 3 would allocate one-half of the charter sector allocation from both percentage and fixed allocations. A fourth approach was selected as the Preferred Alternative;



it would set an allocation schedule based on halibut biomass with regulatory measures linked to the different allocation levels, if approved by the Secretary of Commerce.

## **2.2 Alternatives Considered**

### **Alternative 1. No Action**

The current management program comprises the status quo. The charter sector is currently operating under a GHl in Area 2C and Area 3A. The Area 2C charter harvest has exceeded its GHl every year since 2004. The GHl for Area 2C in 2008 was set at 931,000 lb. It was reduced from its original 2004 level of 1.432 Mlb in 2007, because of a decrease in the Area 2C CEY. The GHl was further reduced to 788,000 lb in 2009, due to a continued decline in halibut abundance in the area, and remains at that level. To ensure the halibut stocks would continue to develop to a level that would support optimum yield in the halibut fisheries, the IPHC and Council have recommended, and the Secretary has adopted, a number of regulatory measures in Area 2C to limit charter halibut harvest to within the GHl. The primary regulatory measures included: (1) effective in 2007 and 2008, maintaining a two-fish daily bag limit provided that at least one of the harvested halibut had a head-on length of no more than 32 inches (81.3 cm) (June 4, 2007, 72 FR 30714); and (2) effective in 2009, a one-fish daily bag limit that superseded the June 4, 2007, two-fish with maximum size rule, a prohibition on harvest by the charter vessel guide and crew, and a line limit equal to the number of charter vessel anglers onboard, not to exceed six lines (May 6, 2009, 74 FR 21194).

Because NMFS imposed no additional charter restrictions at the start of 2011, the IPHC believed that charter harvest was likely to exceed the GHl and result in total harvest exceeding the total CEY. As such, the IPHC recommended and the Secretary adopted a daily bag limit for charter vessel anglers in Area 2C of one halibut with a maximum length of 37 inches per day (76 FR 14300, March 16, 2011). The IPHC recommended this additional management measure in Area 2C to limit charter halibut harvest to the GHl and achieve the IPHC's overall conservation objective for Area 2C.

The Area 3A GHl has been set at 3.65 Mlb, every year since the GHl was implemented. The status quo charter fishery in Area 3A includes a two-fish bag limit and the skipper and crew prohibition of retaining halibut.

A limited entry program for Area 2C and Area 3A was implemented in January 2010; permits were required to be on board vessels in the charter halibut fishery beginning February 1, 2011.

Only eligible persons may hold commercial halibut QS (this includes some charter LEP holders). IFQ regulations prohibit commercial QS holders from leasing IFQ other than under limited circumstances. One exception to the prohibition is that Class A (i.e., processor or freezer) shares may be leased. Another exception is that individual and corporate initial recipients of halibut QS may lease their IFQs to another eligible participant.

### **Alternative 2. Catch Sharing Plan**

Council intent is to define initial charter and commercial harvest allocations and a suite of associated management measures that would be implemented if the charter sector exceeds its designated allocation in an area. This management approach resulted from uncertainties in projecting charter halibut harvests in relation to the status quo GHl Program and the time lag in implementing new regulations to constrain charter harvests once a GHl was exceeded. The catch sharing plan includes six complementary management and policy elements that are summarized below.

- Element 1 would define the common pool for the charter sector using the allocation formula and historical catch years.
- Element 2 would define the annual regulatory cycle, focusing on how the common pool of halibut would be regulated if it is over-harvested. If the charter sector allocation is under-harvested,

management measures could be relaxed to allow the sector to harvest its full allocation in subsequent years, although no automatic roll-over to the following season would be established.

- Element 3 would define the management tools that would be available to the Council to adjust future harvest levels.
- Element 4 would define examples of regulatory development time lines for management decisions and actions, if needed to adjust the charter sector's harvests.
- Element 5 would define how charter LEP holders may acquire and use commercial IFQ to supplement the common pool allocation. It also defines the management structure for the allocation and guided angler fish (GAF).
- Element 6 would provide guidance on the design of a catch accounting system needed to monitor common pool harvests, in combination with GAFs that were purchased from the commercial sector. It is anticipated that a different catch accounting system would be used for the halibut harvested under the common pool and those under the GAF program.

The complete list of elements and options are provided in the EA (beginning on page 9) and are not repeated here. Because this analysis considers the impacts of each element and option in each area, the Council could select different methods or years for determining the allocation in each area.

The Council adopted the following language (see box) as its intent for the development of the catch accounting system for GAFs for the purposes of this analysis. It specifically did not adopt any of the three proposed options for analysis, which were recommended by its Halibut Stakeholder Committee in December 2007. It adopted them with the intent that NMFS consider them in its development of an implementation plan.<sup>45</sup>

**Recordkeeping and Reporting.** One of the critical issues for successful implementation of an interim management regime for charter halibut operators is to shorten the feedback loop for collection of data regarding charter harvests. The Council has requested that staff include in their report a discussion of options for shortening the feedback loop.

It is also the intent of the Council in proposing these options that the real time collection of data should not be used for in-season management changes or in-season closures; rather, it is the intent of the Council that these options be used to shorten the data collection feedback loop to facilitate the timely adoption of management tools designed to achieve the charter sector allocation without in-season changes or in-season closures, in order to maintain, to the extent possible, a season of historical length with a minimum two-fish bag limit.

Option 1. Electronic Reporting. Each LEP holder would be assigned a unique reporting number and would use that number to electronically report the number of halibut caught by clients, that day, on a daily basis. The electronic reporting would be done either through an Internet website or a dial-in telephone system. As additional verification, each client would sign the mandatory logbook, next to the entry containing their name, license number, number and type of fish caught, and any other required information. Logbooks would continue to be submitted weekly.

Option 2. Harvest Tag. Uniquely numbered harvest tags would be distributed to each LEP holder at the beginning of the season and additional tags would be available throughout the season, if needed. The number of harvest tags would be greater than the number of fish allocated to the charter sector for that year (i.e., the tags are not a management tool for restricting or closing charter fishing in-season). When a halibut is landed, the harvest tag would be required to be inserted in the fish's jaw and the harvest tag number recorded in the log book entry for the angler license number of the person who caught the fish. When the fish is processed, the tag would be removed and mailed in, using pre-addressed, stamped envelopes supplied for that purpose. LEP holder would pay a fee to cover the cost of the envelopes and

<sup>45</sup> At final action, the Council deferred the development of the GAF catch accounting system to the agencies.

tags. Harvest tags would preferably be bar coded to enable machine reading, with peel off bar code stickers for placement in the log book.

Option 3. Punch Cards. Each LEP holder would be issued a supply of uniquely numbered punch cards, with punch outs equal to any daily bag limit for that year, or six halibut (whichever is fewer). The cards would be issued at the beginning of the season and additional cards would be available, as needed (i.e., the cards are not a management tool for restricting or closing charter fishing in-season). Each day every client angler would be assigned a punch card and that punch card number would be entered in the log book next to the license number. As each halibut is landed by a client, their respective card would be punched, and at the end of the day the client would sign the punch card in the space provided. The punch card would then be sealed in a supplied stamped and addressed envelope, which would be mailed by the permit holder. LEP holders would pay a fee to cover the cost of the punch cards and mailing envelopes. Any log book entry for which a signed punch card is not received would be corrected to read the maximum number of fish printed on a punch card (i.e., the daily bag limit or six fish).

### **Alternative 3. (Preferred Alternative) Catch Sharing Plan**

Given the rigid timeline for accessing data and the required regulatory process to amend federal regulations, the Council selected a preferred alternative that would set a schedule of allocations between the charter and commercial sectors that was based on halibut abundance, with unique management measures for the charter sector associated with different allocations that would be adjusted in federal regulation via notice prior to the start of the fishing season. This method eliminates delays of three to four years that are associated with implementing regulatory amendments based on prior overages that could be out of phase with conditions at the time of implementation. The preferred alternative, therefore, would not require an annual regulatory analysis to modify charter angler harvests. Management measures would be determined after (1) the IPHC sets the combined catch limit in January each year, and (2) ADF&G forecasts its estimates of charter halibut harvests for that upcoming season in association with the published schedule of allocations and associated regulatory measures.

The Council's policy would allow the charter halibut season to remain open and fishing to continue for the duration of the season, while operating under restriction(s) that would have been implemented pre-season via the IPHC annual management measures. The Council would neither seek to monitor the harvest inseason nor close the fishery when the target harvest level is reached. The Council believes that the restrictions implemented for that season would be sufficient to achieve the sector allocation because measure(s) would have been selected with that objective. The Council would not revisit or readjust the sector allocation(s). Any overages or underages would be accounted in the IPHC stock assessment and halibut biomass estimates. Operationally, overages would result in a modest decrease in the combined charter and commercial catch limit in the following year. Underages would accrue to the benefit of the halibut biomass and all user groups and could result in a modest increase in the combined catch limit in the following year.

Supplemental, individual use of commercial IFQ through inter-sector trading would allow charter LEP holders to lease commercial IFQ, in order to provide anglers additional harvesting opportunities, not to exceed limits in place for unguided anglers. Numerous limitations on the use of GAF are listed in the preferred alternative (see section 1.7).

## **2.3 Background**

### **Previous Council Actions**

The Council has been considering different management tools to restrict the charter sector since the mid-1990s. The GHM Program was implemented to limit charter halibut harvests in 2004. It has been amended several times for Area 2C, because management measures did not constrain harvests to the GHM. Dividing the halibut resource that is available for harvest between the two sectors has been considered previously. Proposed actions attempted to address the open-ended reallocation from the commercial IFQ

sector to the charter sector. An allocation decision was included when the Council approved the halibut charter IFQ program in 2005. The Council rescinded its preferred alternative before the Secretary of Commerce took action. A limited entry program to restrict the number of vessels that may be used in the halibut charter fishery was approved by the Secretary of Commerce in January 2010. The Council has indicated its interest in seeking a long term solution for managing the charter sector, which could include an IFQ or individual catch share program that builds on the LEP and GAF programs.

In the development of this analysis, the Council considered and rejected an approach that would have allocated a fixed amount or percentage of the halibut resource to the charter sector. Once its allocation was harvested, the charter sector would have been closed to any further halibut retention. This type of allocation traditionally has been referred to as a “hard cap,” because the sector would have been prohibited from retaining halibut once the limit was reached, thereby preventing it from exceeding its allocation. The charter sector would not have been prohibited from providing charter trips for other species, halibut trips outside Areas 2C and 3A, or even halibut charter trips within Areas 2C or 3A, where no halibut is retained.

Charter industry representatives contended that because of the sector’s business structure, closing the fishery to retention, in-season, would dramatically disrupt their traditional method of booking clients and operating their businesses. For example, charter operators have indicated that many of their clients book trips a year in advance. If the charter season’s historical length were disrupted, it could force the business to refund deposits for trips scheduled after the closure and severely inconvenience the client, reducing their level of satisfaction with the business that was forced to cancel their trip. This dissatisfaction could logically extend to the visitor’s opinion of the Alaska vacation experience, with ramifications for the State’s entire tourism sector. Charter operators have stated on the record that client satisfaction, word of mouth referrals, and repeat customers are vital to their operations (especially lodge owners and Area 3A charter businesses). If a charter business must cancel a client’s trip, because the season is closed before the trip is taken, operators are rightly concerned that those clients may be unwilling to book future trips with their business, out of that port, or perhaps even in that management area. Widespread trip cancellations have been reported, due to implementation of the one-fish bag limit in Area 2C.

Client dissatisfaction with the business operator could be magnified, if halibut fishing was the primary reason for the trip and the client is unable to easily obtain refunds for all of their other travel expenditures. Many clients book flights to Alaska and schedule other vacation activities along with the charter trips. Ensuring the client is able to take the reserved and paid for charter trip is important to trip providers. Altering the management structure in-season could impact the charter LEP holders’ ability to provide the contracted for trips and, over time, diminish the firm’s economic viability.

In 2007, the Council adopted a moratorium on new entry into the charter halibut sector; an earlier analysis to implement an LEP was rejected in the late 1990s in favor of a more comprehensive rationalization program, which would have included the charter sector into the commercial halibut IFQ program (later rescinded). The Council and many long term members of the charter industry felt that limiting new entry was an important protection for the existing charter fleet if the sector’s harvest is to be capped. If the charter LEP were not implemented, the current charter operators would compete against each other and new entrants for common pool halibut and charter clients. The LEP limits the number of charter businesses and vessels that may participate in the fishery at any one time, but NMFS anticipates that the number of initially issued charter halibut permits will allow permitted vessels have a passenger carrying capacity that exceeds 2008 levels of participation in the charter fishery. Thus, it is likely that client access to the resource would not be limited in the near term (the imposition of a one-fish bag limit in Area 2C to control charter removals is evidence of that need). The LEP strictly limits the number of operations that could provide charter trips and the number of clients each vessel may carry on a trip (NPFMC 2007a). The analysis of the LEP program projects that 502 permits would be issued in Area 2C and 418 permits would be issued in Area 3A (Table 14). The permits would be issued to 231 business operating in Area 2C and 296 businesses operating in Area 3A.

**Table 14 Estimated number of permits that would be issued and the number of businesses receiving the permits under the charter halibut limited access program**

Area	Permits	Businesses
2C	502	231
3A	418	296

Source: ADF&G Saltwater Logbook data, 2004, 2005, and 2008. These estimates reflect activity in the recency year 2008.

Table 15 shows participation in bottomfish fisheries from 2004 through 2008. This time period covers the years that were included in the qualification period for an LEP. Based on the number of vessels that fished during those years, the number of permits issued is expected to be substantially fewer than the number of vessels that fished halibut in 2008. In Area 2C, 722 vessels charter fished during 2008, but only 502 permits are expected to be issued. Under the LEP, more than 502 “unique” vessels could be used to charter fish halibut in the future, because permits are not attached to a specific vessel. The flexibility to freely move a permit between vessels could allow additional trips to be provided, if a vessel breaks down or if a vessel needs maintenance. However, because a permit must be onboard each vessel, only 502 vessels would be allowed to take charter clients fishing at any one time. In Area 3A, 605 vessels were used to take clients halibut fishing in 2008, compared to 418 permits that are expected to be issued.

**Table 15 Participation in the fisheries 2004-2010.**

Year	2C			3A		
	Trips	Vessels	Trips/Vessel	Trips	Vessels	Trips/Vessel
2004	20,117	625	32	23,248	530	43
2005	20,925	652	32	23,278	567	41
2006	25,923	693	37	24,126	622	39
2007	27,456	727	38	25,491	643	40
2008	26,221	719	36	23,314	604	39
2009	19,333	636	30	18,981	547	35
2010	19,984	604	33	19,599	523	37

Source: ADF&G Saltwater Logbook data.

A substantial proportion of the businesses providing charters in 2008 will not qualify for halibut charter LEPs, based on the projected number of permits that would be issued. In Area 2C, 173 charter businesses that showed evidence of bottomfish fishing in 2008 would not qualify to receive an LEP. Of those businesses, 115 had five or more trips in 2008, and 71 had fifteen or more trips in 2008. About 43 percent of the Area 2C businesses active in 2008 would not qualify for permits. In Area 3A, 154 businesses that showed evidence of bottomfish fishing in 2008 would not qualify to receive an LEP. Of those businesses, 111 had five or more trips in 2008, and 81 of these had fifteen or more trips in 2008. Based on these estimates, 34 percent of the Area 3A businesses active in 2008 would not qualify for permits.

The charter LEP also contains a provision that designates some LEPs as non-transferable. Permits would be designated as non-transferable if the participation history of the business generating the permit was at a lower level than required to earn a transferable permit. Issuing some non-transferable permits would reduce the maximum harvest capacity of the fleet over time. Harvest capacity would be reduced when recipients of non-transferable licenses leave the fishery. A projected 31 percent (155) of Area 2C LEPs are non-transferable, while a projected 24 percent (99) of Area 3A LEPs are non-transferable.

The LEP analysis concluded that it is likely that the number of days fished per vessel could increase significantly under the LEP and the LEPs could be used to take more than one trip per day. The flexibility to increase the number of trips a permit generates is expected to allow charter LEP holders to carry

enough clients to harvest historical levels of halibut. As non-transferable permits leave the fishery, the overall capacity of the fleet to carry clients will decline. Whether the fleet has sufficient capacity to carry enough clients to harvest its allocation will depend on a number of factors including:

1. the size of the charter fleet's halibut allocation;
2. the client demand for charter trips;
3. the ability of the charter LEP holders to fully utilize the capacity of their permits; and
4. the regulations in place to govern the harvest of charter clients.

Continued growth in halibut harvests by charter clients reduces the portion of the CEY that is available to the commercial halibut IFQ fishery. The IPHC process to determine the amount of halibut available for the charter fishery and commercial IFQ fishery 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 (20 percent) to the exploitable biomass estimate. The fishery CEY is calculated by subtracting an estimate of all other non-commercial removals<sup>46</sup> 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. The entire process is described in more detail in the EA.

Management measures have been considered that could constrain the growth in charter halibut harvests. Some measures impose a restriction on when, where, or how fishing may occur; limit the number of halibut that a charter client may retain; or limit the size of halibut that may be retained. Examples are restricting charter boat crew harvests, reducing bag limits, and implementing restrictions on the sizes of halibut that may 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 appropriate by policy makers (NPFMC 2006b). An action such as reducing the bag limit to one fish is expected to impact some clients' 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.

### **Historical Halibut Catches**

The halibut resource has traditionally been harvested by commercial, sport (guided and non-guided), and subsistence users and is considered fully utilized. The IPHC did not have a formal regulatory definition of subsistence prior to 2002; however, it did track subsistence harvests that were taken under a personal use category. This left only sport harvests under the sportfishing category. The IPHC adopted regulatory language defining subsistence ("Customary and Traditional Fishing in Alaska") in 2002. Federal regulations now recognize and define a legal subsistence fishery for halibut in Alaska. Additional information is provided in the EA.

Sportfishing for halibut is an important recreational activity for resident and non-resident anglers. Sport harvests of halibut rapidly increased in the late 1980s to mid-1990s, due to continued increases in targeted effort (Tersteeg and Jaenicke 2005). Sportfishing effort in Southeast Alaska (Area 2C) is mostly concentrated around Juneau, Ketchikan, Sitka, Wrangell, and Petersburg. However, substantial effort is also expended near remote fishing lodges and smaller communities throughout the region, such as Craig, Gustavus, and Yakutat (Tersteeg and Jaenicke 2005). In Southcentral Alaska (Area 3A), charter and unguided sport catch occurs primarily on the Kenai Peninsula. Meyer (2005) reported that participation in the marine sport fisheries of Area 3A more than doubled in the 15 years prior 2005. A major portion of marine fishing effort is directed at halibut and state-managed groundfishes, including rockfishes, lingcod, and sharks. Statewide recreational halibut harvests increased from 40,000 fish in 1980 to over 440,000

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<sup>46</sup> Non-commercial removals include: projected legal-sized PSC, projected unguided sport catch, projected wastage in the commercial hook-and-line fishery, and projected personal use/subsistence removals. Mortality of sub-legal halibut from the commercial fisheries is accounted for in the stock assessment, but not for the sport fisheries.

fish in 2009. The 2009 harvest of 440,000 halibut made up 15 percent (in number) of the statewide recreational harvest of all species.

Alaska sport harvest estimates are derived from statewide postal survey estimates of harvest in numbers of fish, in conjunction with onsite sampling for average weight at points of landing. Estimates usually lag by one year. Halibut removals for Areas 2C and 3A are presented in Table 16 and Table 17, respectively. In summary, charter halibut harvests increased by more than 93% in Area 2C between 1997 and 2008 (from 1.03 Mlb to 1.99 Mlb). Area 2C charter harvests declined approximately 37% from 2008 to 2009 (from 1.99 Mlb to 1.25 Mlb). In Area 3A, charter harvests have varied from a low of 2.53 Mlb in 1999, to a high of 4.00 Mlb in 2008; however, harvests in 1997 and 2008 are about equal. Area 3A charter harvest declined approximately 19% from 2008 to 2009. Charter harvests amounted to approximately 16 percent and 10 percent of total halibut removals in Areas 2C and 3A, in 2009, compared with 7 percent and 8 percent, respectively, in 1999.

Area 2C commercial halibut removals have fluctuated from a low of 7.76 Mlb in 1995, to a high of 10.49 Mlb in 2005. Removals were between 9.66 Mlb and 9.90 Mlb during 1997 through 1999. Removals were between 8.27 Mlb and 8.45 Mlb over the four year period from 2000 through 2003. From 2004 through 2006, removals increased to just below 10.5 Mlb in each year. Commercial removals have declined each year since 2006 and were 4.87 Mlb in 2009. In Area 3A, commercial removals followed a similar trend to that in Area 2C. Removals ranged from 18.14 Mlb in 1995, to 26.13 Mlb in 2007. Commercial removals have declined each year since 2007 and were 21.40 Mlb in 2009. Commercial removals were highest from 1997 through 1999, and 2004 through 2008. Removals were over 24 Mlb each of those years.

The number of halibut QS holders has declined since QS was issued initially (NMFS 2007). In Area 2C, 2,389 QS holders were initially issued halibut QS. As of the end of 2009, the number of halibut QS holders had declined to 1,205. That represents a decrease of 1,184 QS holders. In Area 3A, 3,073 QS holders were given an initial halibut allocation. By 2009, the number of QS holders was reported to be 1,500. So, 1,573 QS holders left the commercial halibut fishery between initial allocation and the end of 2009. This was neither an unexpected, nor undesirable outcome of the IFQ program.

**Table 16 Area 2C halibut removals (Mlb), 1995–2009. Source: G. Williams, IPHC**

Year	Total CEY	Fishery CEY	Commercial Catch Limit	Commercial Catch	Sport Guided	Sport Unguided	Sport Total	PSC Mortality (Legal Sized)	Personal Use (Subsistence)	Wastage (Legal Sized Fish)	TOTAL CEY REMOVALS
1995			9.00	7.76	0.99	0.77	1.75		0.17	0.05	9.57
1996			9.00	8.74	1.19	0.94	2.13		0.17	0.04	10.91
1997	13.92	11.41	10.00	9.75	1.03	1.14	2.17	0.26	0.17	0.04	12.23
1998	17.70	15.48	10.50	9.67	1.58	0.92	2.50	0.22	0.17	0.04	12.60
1999	12.80	10.49	10.49	9.90	0.94	0.90	1.84	0.23	0.17	0.07	12.22
2000	8.44	6.31	8.40	8.27	1.13	1.13	2.26	0.23	0.17	0.04	10.96
2001	11.20	8.78	8.78	8.27	1.20	0.72	1.93	0.22	0.17	0.04	10.63
2002	10.66	8.50	8.50	8.46	1.28	0.81	2.09	0.18	0.17	0.03	10.92
2003	12.00	9.11	8.50	8.29	1.41	0.85	2.26	0.17	0.62	0.03	11.36
2004	20.00	17.00	10.50	10.12	1.75	1.19	2.94	0.15	0.68	0.03	13.91
2005	14.90	11.80	10.93	10.49	1.95	0.85	2.80	0.14	0.60	0.03	14.06
2006	13.73	10.33	10.63	10.40	1.80	0.72	2.53	0.22	0.58	0.02	13.74
2007	10.80	7.61	8.51	8.34	1.92	1.13	3.05	0.21	0.53	0.03	12.16
2008	6.50	3.92	6.21	6.15	1.99	1.27	3.26	0.21	0.46	0.01	10.09
2009	5.57	2.86	5.20	4.87	1.25	1.12	2.37	0.22	0.46	0.01	7.92

**Table 17 Area 3A halibut removals (Mlb), 1995–2009. Source: G. Williams, IPHC**

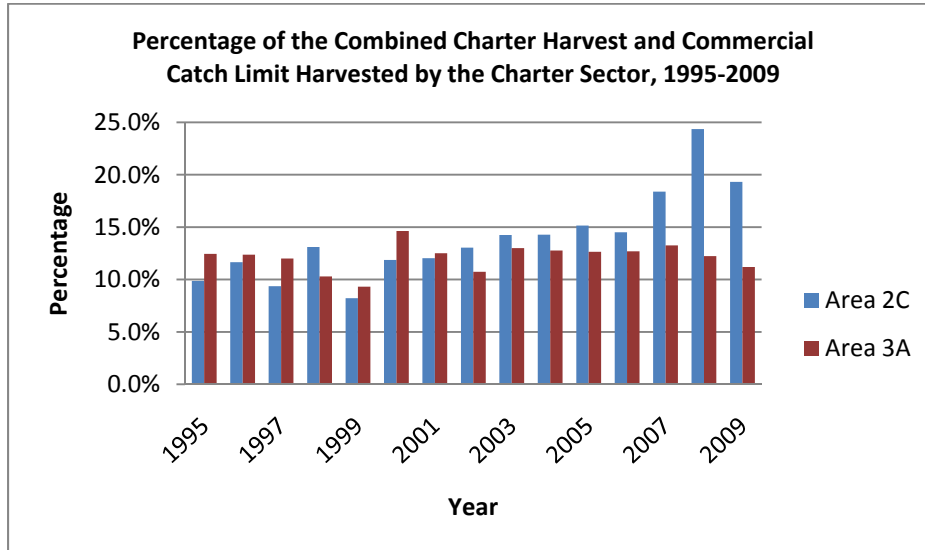
Year	Total CEY	Fishery CEY	Commercial Catch Limit	Commercial Catch	Sport Guided	Sport Unguided	Sport Total	PSC Mortality (Legal Sized)	Personal Use (Subsistence)	Wastage (Legal Sized Fish)	TOTAL CEY REMOVALS
1995			20.00	18.14	2.85	1.67	4.51			0.13	22.78
1996			20.00	19.32	2.82	1.92	4.74			0.18	24.24
1997	40.66	33.55	25.00	24.24	3.41	2.10	5.51	1.15	0.10	0.07	31.07
1998	45.44	38.71	26.00	24.54	2.99	1.72	4.70	1.49	0.07	0.15	30.96
1999	31.80	24.67	24.67	24.31	2.53	1.70	4.23	1.60	0.07	0.12	30.32
2000	18.98	11.94	18.31	18.17	3.14	2.17	5.31	1.21	0.07	0.06	24.81
2001	27.80	21.89	21.89	21.10	3.13	1.54	4.68	1.70	0.07	0.07	27.61
2002	30.96	24.14	22.63	22.61	2.72	1.48	4.20	1.18	0.07	0.14	28.21
2003	40.00	34.22	22.63	22.32	3.38	2.05	5.43	1.36	0.07	0.07	29.26
2004	36.50	30.00	25.06	24.72	3.67	1.94	5.61	1.52	0.28	0.08	32.20
2005	32.90	26.30	25.47	25.23	3.69	1.98	5.67	1.32	0.43	0.16	32.81
2006	32.18	24.94	25.20	25.24	3.66	1.67	5.34	1.43	0.38	0.05	32.44
2007	35.78	28.21	26.20	26.13	4.00	2.28	6.28	0.99	0.37	0.05	33.83
2008	28.96	22.25	24.22	24.17	3.38	1.94	5.32	1.06	0.34	0.06	30.94
2009	28.01	20.84	21.70	21.40	2.73	2.02	4.76	1.07	0.33	0.04	27.60

Percentage of Halibut Harvested by Charter Sector

Figure 9 shows the percentage of the combined charter and commercial catch limit taken in the charter sector during 1995 through 2009. The percentage of total halibut harvested by the charter sector in Area



2C shows no consistent increasing or decreasing trend from 1995 through 2000. From 2001 through 2006, the charter sector percentage of the combined harvest was fairly stable. The charter sector percentage increased in 2007, peaked at 24 percent in 2008, and dropped to 19 percent in 2009. In Area 3A, the charter sector percentage of the total decreased from 1995 through 2000. Its percentage of the total spiked in 2000, and then decreased through 2002. The percentage was fairly stable during 2003 through 2009.

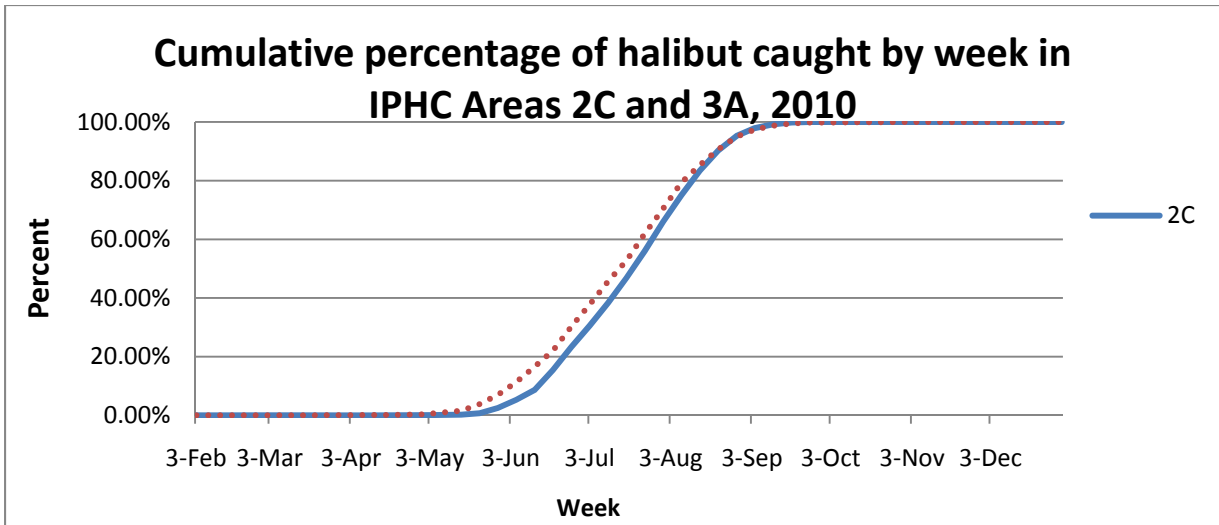
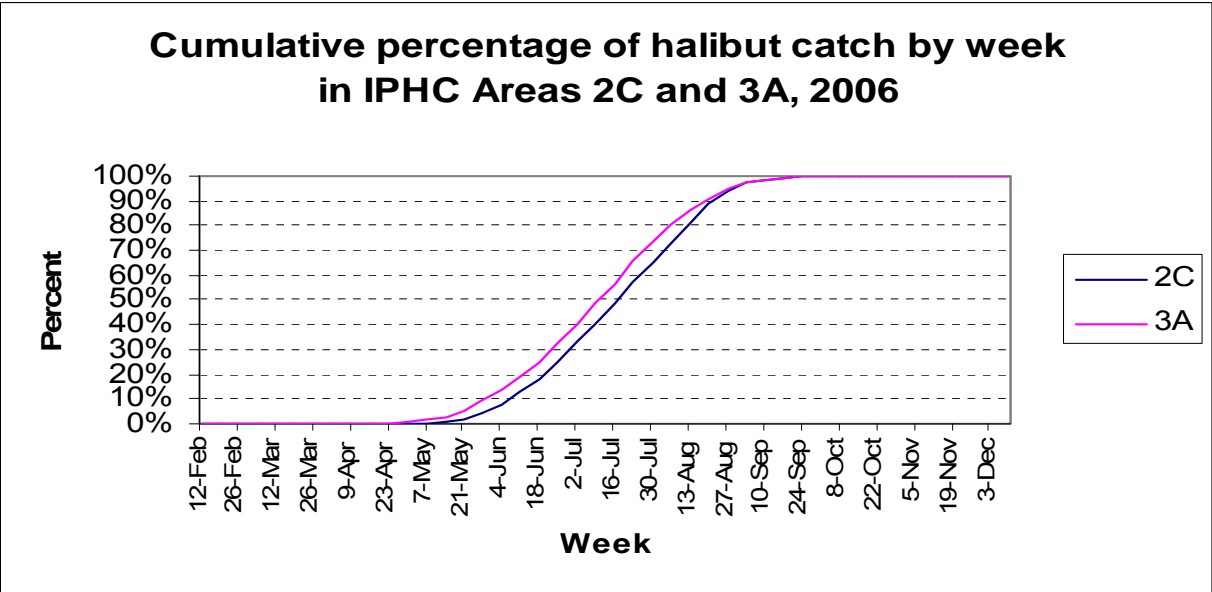


**Figure 9 Charter halibut harvest as a percentage of combined commercial IFQ and charter harvest, 1995–2009.**

### Charter Harvest by Week

Figure 10 shows the cumulative percentage of charter catch, by week, during 2006. The shape of the harvest curves indicates that the weekly catches were lower either early or late in the fishing year than during the peak season. During 2006, the Area 2C charter fleet caught over 5 percent of its total catch every week from June 5 through the week starting August 21. The percentage of total charter catch dropped dramatically during the weeks before and after those dates. In Area 2C, the charter sector is dependent on cruise ship clients in ports like Ketchikan, Sitka, Juneau, and Haines; those clients are less likely to shift their trip dates, because their time in Alaska is linked to their cruise dates.

Halibut catches from Area 3A tend to follow the same general trend as discussed for Area 2C. The primary difference in the two areas is that Area 3A catch tends to start sooner and taper off sooner than in Area 2C. The Area 3A charter fleet was catching over 4.1 percent of its total catch during the week of May 22 in 2006. By the week of August 14, the fleet was catching less than 5 percent of its annual total on a weekly basis. While the Council reviewed the plot for 2006 when selecting its preferred alternative, similar trends in weekly halibut catches occurred in both areas in 2010.



**Figure 10** Cumulative percentage of halibut charter catch by week during 2006 and 2010.

Figure 11 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 activity later in the year than Area 2C. The Area 2C halibut charter fishery continued at peak summer levels for about two weeks longer than Area 3A, during 2006. Both areas had weeks when over 8 percent of the annual catch was taken. These patterns of charter catch were consistent with distribution of charter trips between April and October in 2008. The 2006 data in this section likely represent the consistent timing of the majority of charter catch activity each year. Charter fishing trips and catch are concentrated in June, July, and August. Limiting a charter operator's ability to provide trips during those months would have the greatest impact on his or her business. While the Council reviewed the plot for 2006 when selecting its preferred alternative, similar trends in weekly halibut catches occurred in both areas in 2010.

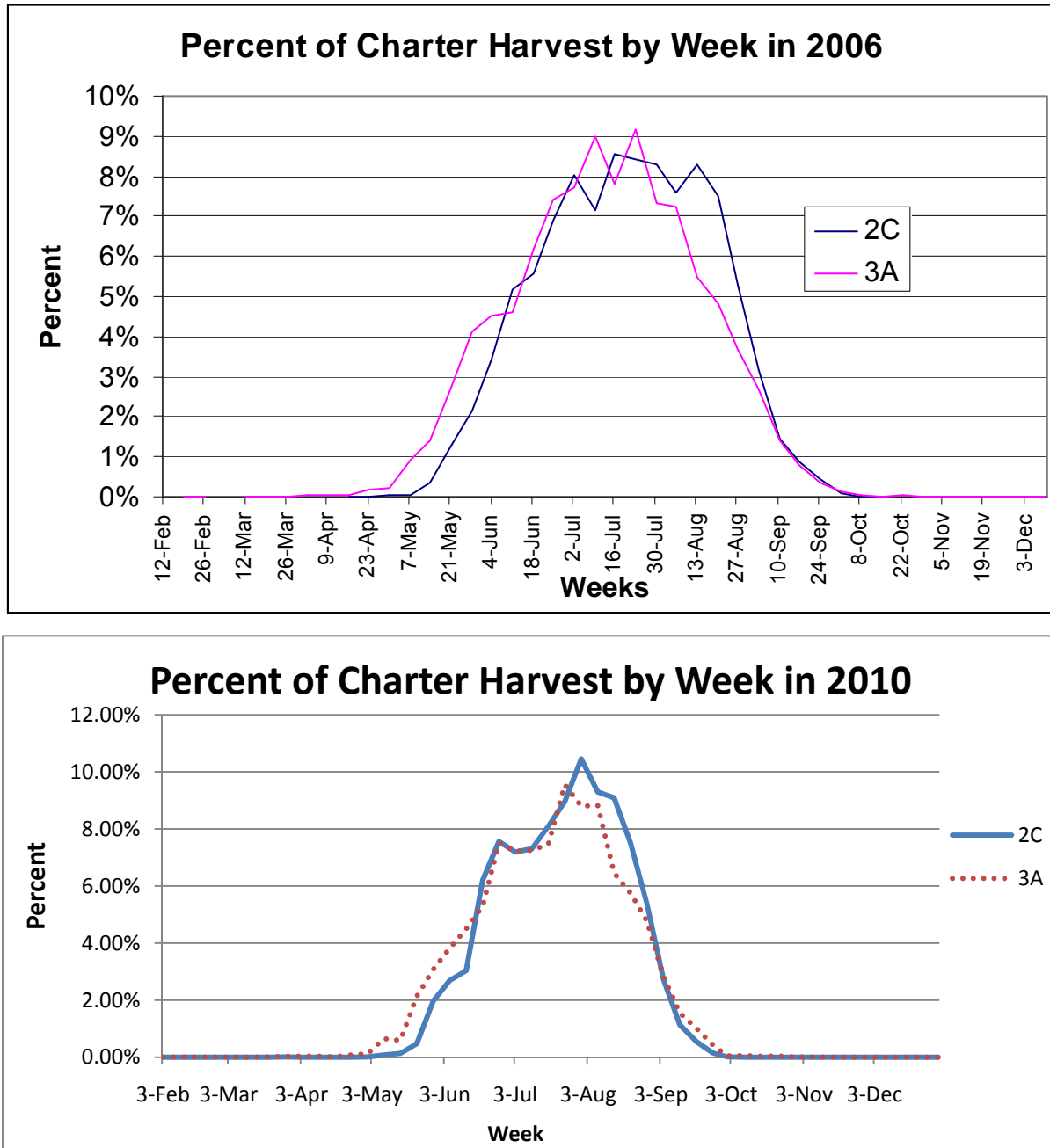


Figure 11 Weekly percentage of total charter harvest during 2006 and 2010.

## 2.4 Status Quo

### Current Guideline Harvest Level (GHL) Charter Regulations

Current regulations define a GHL for the charter sector. The GHL amount is linked to the CEY that is set by the IPHC for that year. The GHL defined a target harvest level for the charter sector of 1.432 Mlb (equivalent to 13 percent of the CEY) in Area 2C, and 3.650 Mlb (equivalent to 14 percent of the CEY) in Area 3A, respectively, from 2004 through 2007 (NPFMC 2007b and 2007c). In 2008, the CEY established by the IPHC was 6.500 Mlb in Area 2C and 28.960 Mlb in Area 3A. Because the Area 2C CEY was reduced, from 11.4 Mlb in 2007, the 2008 CEY resulted in a GHL of 931,000 lb. The CEY was reduced again in 2009, and the GHL was set at 788,000 lb. The Area 3A GHL has remained unchanged at 3.650 Mlb since 2004 (73 FR 6709, February 5, 2008).

### Coast-wide Assessment

The historical (1995 through 2007) catch and CEY estimates used in this analysis are based on the area-wide assessment. Starting in 2008, the coast-wide assessment was used to derive CEYs used in this analysis. Prior to 2008, the IPHC had been considering switching to a coast-wide assessment to account for migration. The change in assessments has a larger impact on Area 2C, than it does on Area 3A. 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 Mlb, total available yield about 80 Mlb) 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.*

The IPHC reported the coast-wide exploitable biomass was 414 Mlb in 2007. By 2008, the estimated exploitable biomass decreased to 361 Mlb (IPHC 2008b). This represents a 53 Mlb decrease. The coast-wide exploitable biomass has continued to decrease each year and was 318 Mlb in 2011 (IPHC 2011). This represents a 23 percent decrease in the halibut exploitable biomass since 2007.

### Changes in the Status Quo

The status quo for the charter sector in Area 3A has remained relatively stable during Council deliberations on this action. A primary reason for this is the charter sector has not exceeded the Area 3A GHL since 2007. The Area 2C regulations have changed during the development of this action. This section provides a description of recent changes in the Area 2C charter fisheries. Much of the language in this section that describes the history of actions since 2007 is taken from the analysis prepared for the proposed rule implementing the charter LEP (NMFS 2009).

Concerns that the Area 2C GHL was being exceeded initiated a management response by the IPHC, NMFS, ADF&G, and, subsequently, the Council, during 2007. In January 2007, the IPHC recommended that NMFS reduce the daily bag limit for anglers on charter vessels in Areas 2C, from two halibut, to one halibut during certain time periods. Specifically, the IPHC recommended that a one-fish daily bag limit should apply to charter vessel anglers from June 15 through July 30 in Area 2C. The IPHC recommended this bag limit reduction, because it believed its management goals were at risk by the magnitude of the charter halibut harvest in excess of the GHL, especially in Area 2C.

In a letter to the IPHC on March 1, 2007, the Secretary of State, with concurrence from the Secretary of Commerce, rejected the recommended one-fish daily bag limit in Areas 2C, and indicated that appropriate reduction in the charter vessel harvest in these areas would be achieved by a combination of ADF&G and NMFS regulatory actions. For Area 2C, the State of Alaska Commissioner of Fish and Game issued an emergency order to prohibit retention of fish by charter vessel guides and crew members (No. 1-R-02-07).

This order was similar to one issued for 2006. This action was intended, in conjunction with other measures, to reduce the 2007 charter vessel harvest of halibut to levels comparable to the IPHC-recommended bag limit reduction, which was estimated to range from 397,000 lb to 432,000 lb.

Regulatory action to remedy GHL overages by the start of the principal sport fishing season, June 2007, required the Secretary of Commerce, through NMFS, to develop regulations independent of the Council process. The preferred alternative selected by NMFS maintained the traditional two-fish daily bag limit, provided that at least one of the harvested halibut has a head-on length of no more than 32 inches (81.3 cm). If a charter vessel angler retained only one halibut in a calendar day, that fish may be of any length. NMFS published regulations implementing this partial maximum size limit on June 4, 2007 (72 FR 30714).

The Council considered management alternatives for the charter vessel halibut fishery in Area 2C, during the first half of 2007. Unlike the IPHC, ADF&G, and NMFS actions, however, the alternatives were designed to constrain the charter vessel fishery to its GHL. In June 2007, the Council adopted a preferred alternative that contained two courses of action. The Council recommended that the selection between the two actions would depend on whether the halibut CEY decreased substantially for 2008. As explained above, the GHLs for Area 2C and 3A are linked to the CEY, determined annually by the IPHC, as a basis for setting the commercial fishery catch limits in these areas. A substantial decrease in the CEY could cause the GHL for Area 2C to decrease from its previous 1.432 million lb (649.5 mt) level. Not knowing in June 2007 how the GHL may be affected by IPHC action in January 2008, the Council recommended a suite of charter vessel fishery restrictions, if the GHL in Area 2C remained the same in 2008 (Option A) and a different, more restrictive, suite of restrictions, if the GHL decreased in 2008 (Option B). The Council recommended no change in management of the charter vessel fishery in Area 3A, because that fishery appeared stable at about its GHL. A proposed rule was published December 31, 2007 (at 72 FR 74257), soliciting comments on both options for Area 2C.

At its January 2008 annual meeting, the IPHC set the 2008 total CEY for Area 2C at 6.5 Mlb. This was a 4.3 Mlb (1,950.4 mt) reduction from the 2007 total CEY of 10.8 Mlb, which triggered a reduction in the Area 2C GHL to 931,000 lb. This reduced GHL compelled selection of the more restrictive Option B, for implementation in the final rule. Option B imposed a daily bag limit of one halibut for each charter vessel angler, prevented charter vessel guides, operators, and crew from harvesting halibut while clients were on board, restricted the number of lines used to fish for halibut on a charter vessel, and added certain recordkeeping and reporting requirements. These regulations were published on May 28, 2008 (73 FR 30504), and became effective on June 1, 2008.

On June 2, 2008, the Option B regulations were challenged in U.S. District Court for the District of Columbia by 11 plaintiffs requesting a temporary restraining order and preliminary injunction on implementing the regulations, particularly the one-halibut daily bag limit. On June 10, 2008, the court granted the plaintiff's request concluding that plaintiffs demonstrated a likelihood of success on the merits of their claims and enjoined NMFS from enforcing the one halibut daily bag limit. The court ordered that the previous (2007) rule become effective, which allowed a two-fish daily bag limit, provided that at least one of the harvested halibut has a head-on length of no more than 32 inches. On June 19, 2008, the court granted plaintiffs a preliminary injunction, which continued the effect of the temporary restraining order.

The court's decision was based largely on the argument that the one-fish bag limit was designed to achieve the reduced 2008 GHL in Area 2C, and NMFS could not know in June 2008 whether this GHL was exceeded. This would not be known until ADF&G produced its final estimate of the 2008 sport fishing harvest in October of 2009. Hence, the plaintiffs argued, and the court agreed, that NMFS had violated its 2003 GHL rule, by acting to impose restrictions before knowing that the new GHL was exceeded. In response to the Court's 2008 decision, NMFS withdrew the 2008 rule and prepared a revised analysis in support of new rulemaking in 2009 that implemented a one fish limit in Area 2C.

The 2009 IPHC stock assessment resulted in a further reduction of the Area 2C GHL to 788,000 lb. The 2009 analysis incorporated this new information and rulemaking corrected deficiencies that were identified by the Court in the previous analysis and rule. The 2009 rule was challenged, but the same Court denied a request for a preliminary injunction; and the one-fish bag limit became effective on June 5, 2009. The one halibut per day bag limit for charter vessel anglers remains in effect for Area 2C.

The Area 2C charter harvest has exceeded its GHL every year since 2004 notwithstanding the previously described management measures designed to control sport halibut harvest in this area. During 2004 through 2007, the GHL was 1,432,000 lb (649.5 mt). During that time period, charter harvests were approximately 1,750,000 lb (793.8 mt) in 2004, 1,952,000 lb (885.4 mt) in 2005, 1,804,000 lb (818.3 mt) in 2006, and 1,918,000 lb (869.9 mt) in 2007. In 2008, the GHL was 931,000 lb (422.3 mt) and charter harvests was approximately 1,999,000 lb (906.7 mt). In 2009 the GHL was 788,000 lb (357.4 mt) and the charter harvest was approximately 1,245,000 lb (564.7 mt). In 2010, the GHL was 788,000 lb (357.4 mt). The Alaska Department of Fish and Game (ADF&G) provided the IPHC with a preliminary estimate of the charter harvest in 2010 of 46,816 fish yielding 1,279,000 lb (580.1 mt) (November 1, 2010, letter from ADF&G to the IPHC).

The Total CEY for 2011 is 5,390,000 lb (2,444.9 mt) in Area 2C. The corresponding GHL is 788,000 lb (357.4 mt) in Area 2C. Because NMFS imposed no additional charter restrictions in 2011, the IPHC believed that charter harvest was likely to exceed the GHL and result in total harvest exceeding the total CEY. As such, the IPHC recommended and the Secretary adopted a daily bag limit for charter vessel anglers in Area 2C of one halibut with a maximum length of 37 inches per day (76 FR 14300, March 16, 2011). The IPHC recommended this additional management measure in the Area 2C charter fishery to limit charter halibut harvest to the GHL and achieve the IPHC's overall conservation objective for Area 2C.

### **Projected CEYs and GHLs**

The projections of halibut CEY used in this analysis were prepared for the Council in 2008. Actual CEYs from 2008 through 2011 in both Area 2C and Area 3A were lower than the projections prepared for this analysis. As a result, the charter halibut allocations calculated from projected CEYs in this analysis for all alternatives considered are likely higher than the charter halibut allocations that would result from updated projections. However, the description of the effects of the options on charter harvest and the charter sector provided in this analysis would also be applicable to lower charter sector allocations.

In 2008, the IPHC produced Total CEY projections for 2008 through 2013, to allow the analysts to project GHLs in Area 2C and Area 3A. Those projections showed that Area 2C is at a low level, relative to previous years. The implementation of the coast-wide model plays an important role in the projected Area 2C CEY decrease in 2008. The IPHC projected that the Area 2C CEY would increase from 2008 through 2013. The IPHC projected that by 2011, the CEY would return to a level that would allow the GHL to be set at 1.432 Milb (IPHC 2008b). However, the actual Area 2C CEY continued to decline after 2008, and the GHL remained at 0.788 Milb from 2009 through 2011. Note that the GHL would be replaced by the proposed allocation under the preferred alternative, if implemented. Projections provided by the IPHC for 2008 through 2013 and the actual Area 2C and Area 3A CEYs and GHLs for 2008 through 2011, are provided in Table 18.

The current Area 3A CEY is lower than in recent years, but it remains large enough to yield a GHL of 3.65 Milb. In 2007, the IPHC projected the Area 3A CEY to increase each year from 2008 through 2013. The IPHC projected that by 2013, the CEY would be 162 percent of the 2008 level, but this increase would not have changed the GHL. Although the actual Area 3A CEY has declined each year since 2008, the GHL has remained at 3.65 Milb through 2011.

**Table 18 IPHC staff CEY projections for Area 2C and 3A, 2008–2013 and actual CEY and GHL from 2008-2011**

Year	Area 2C				Area 3A			
	Projected CEY (Mlb)	Actual CEY (Mlb)	Projected GHL (Mlb)	Actual GHL (Mlb)	Projected CEY (Mlb)	Actual CEY (Mlb)	Projected GHL (Mlb)	Actual GHL (Mlb)
2008	6.5	<b>6.5</b>	0.931	<b>0.931</b>	29.0	<b>29.0</b>	3.65	<b>3.65</b>
2009	7.4	<b>5.6</b>	1.074	<b>0.788</b>	32.8	<b>29.0</b>	3.65	<b>3.65</b>
2010	8.4	<b>5.0</b>	1.217	<b>0.788</b>	37.3	<b>28.0</b>	3.65	<b>3.65</b>
2011	9.3	<b>5.4</b>	1.432	<b>0.788</b>	41.5	<b>26.2</b>	3.65	<b>3.65</b>
2012	10.1		1.432		44.9		3.65	
2013	10.6		1.432		47.1		3.65	

Source: IPHC Staff.

## 2.5 Analysis of Alternative 2

This section provides estimates of the various initial allocation options under Element 1 and provides a discussion of each of the other elements under Alternative 2. It includes a comparison of projected charter halibut harvests with projected charter halibut allocations. In 2008, IPHC staff provided projections of future combined catch limits in Areas 2C and 3A. Actual catch limits varied from these projections from 2009 through 2011. However, IPHC staff did provide high<sup>47</sup> and low estimates of the combined catch limits that showed relatively small variations from those used in this analysis. As discussed in the previous section, actual CEYs from 2008 through 2011 in both Area 2C and Area 3A were lower than the projections prepared for this analysis. As a result, the charter halibut allocations calculated from projected CEYs in this analysis for all alternatives considered are likely higher than the charter halibut allocations that would result from updated projections. However, the description of the effects of the options on charter harvest and the charter sector provided in this analysis would also be applicable to lower charter sector allocations.

The second component needed for the comparison is projections of future charter harvest. Contractor NEI provided those estimates to the Council in 2007 for other charter halibut amendments. An autoregressive integrated moving average (ARIMA) model was run using data from 1996 through 2006, to project future charter angler harvest. Future harvests are then adjusted by using estimated changes in angler demand under various changes in the daily bag limit, the size limit of halibut, and changes in season lengths.

Since the ARIMA model was developed, the U.S. and global economic conditions have changed dramatically. Factors that influence demand for charter trips (i.e., employment, disposable income, and tourism) have declined. Therefore, the demand for charter trips is also expected to decline, relative to the projections made in the models used in this analysis. It is not possible to quantify the decrease in demand that is expected. Research conducted under contract (McDowell 2011) for the State of Alaska indicates that the number of visitors to Alaska declined by 11.8 percent between the summers of 2008 and 2010. The McDowell report notes that the overall number of visitors to Alaska has declined each year since 2007.

Other recently available information compiled by McDowell for the State of Alaska indicates that the decline in visitor traffic between 2007-08 and 2008-09 was accompanied by an estimated \$270 million decline in visitor spending, a 15 percent drop (McDowell 2010). As a result of the decline in visitor

<sup>47</sup>The high R projections assume that average recruitment (incoming age 6 year classes) will be one standard deviation below the 1996–2004 average. The low R projections assume that average recruitment (incoming age 6 year classes) will be one standard deviation above the 1996–2004 average.

spending in 2009, summer season visitor industry-related employment in Alaska was about 2,000 to 2,500 jobs below the 2008 level.

The McDowell study showed that the number of visitors traveling to Alaska by cruise ship dropped 14.5 percent from 2009 to 2010. This decline primarily resulted from five cruise ships being deployed to other destinations. For example, Royal Caribbean has reduced the number of ships in Alaska, from three to two. NEI estimates indicate removing this ship cut capacity by 40,000 passengers. The ship was removed, in part, because of reduced demand and lower profit margins caused by the world economy. The \$50 per passenger tax added in 2007,<sup>48</sup> also was reported to be a major factor in the decline of cruise ship tourists. Information regarding the 2010 tourist season also was summarized in the Alaska Journal of Commerce.<sup>49</sup> That story stated that decisions by cruise companies to redeploy ships from Alaska voyages to other ports in 2010 will have broad effects in the state's economy, particularly in Southcentral and Interior Alaska regions.

Change in charter trip demand cannot be estimated with the information that is currently available. However, if the change is assumed to be proportional to the decrease in tourism, the number of charter trips could have declined by as much as 14.5 percent from 2009 to 2010. Decreased demand for charter trips of that magnitude could significantly amplify changes in demand that would occur as a result of more stringent harvest restrictions on the charter sector, such as changing a two-fish bag limit to a one-fish bag limit.

It is not possible to adjust the models used in this analysis because these economic changes have occurred too recently. Projected charter harvest in future years that are used in this analysis could be overstated. Until consumer confidence, disposable income, and tourism return to levels enjoyed prior to 2008, the difference between the projected harvest and the projected sector allocation is likely overstated in cases where the allocation is too small. The actual difference may be greater than projected when the allocation is projected to exceed projected harvest.

### **Element 1– Initial Allocation**

This section presents information on data and methods used to calculate the initial allocation options to determine the commercial setline fishery and charter sector allocations under Alternative 2. The initial allocation to the charter sector determines the size of the common pool of halibut for use by charter LEP holders and sets the charter angler's target harvest. All LEP holders may allow their clients to harvest from the common pool. The total number of halibut each business may harvest is limited only by the number of clients they can attract, the restrictions on their LEP that determine the maximum number of clients that may be on the vessel for a trip, and the individual client harvest regulations.

The concept of GAF is discussed in detail under Element 5. In the context of this amendment, GAF could be leased by LEP holders from the persons initially issued commercial IFQ. The purpose of GAF is to increase charter angler's harvesting opportunities, when the unguided angler daily bag limits are less restrictive than those for the charter sector.

Three types of allocation options were considered to determine the common pool under Alternative 2, each with various suboptions. The first option would allocate a percentage of a combined commercial and charter catch limit to the charter sector. The catch sharing plan assumes that the IPHC would set the combined commercial setline and charter catch limit. A second option would apportion a fixed number of pounds to the charter sector. Under a suboption, the fixed-pound option would be converted to a percentage that would move in predefined steps associated with total CEY or combined commercial and charter catch limit changes. A third option would allocate half of the allocation as fixed pounds, and the remaining half as a percentage of the combined catch limit to the charter sector. It would set a floor for the charter allocation, while allowing half of the charter allocation to vary with the CEY.

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<sup>48</sup> <http://www.travelweekly.com/Cruise-Travel/Royal-Caribbean-s-capacity-cut-worries-Alaska-tourism-groups>

<sup>49</sup> [http://www.alaskajournal.com/stories/050809/loc\\_img\\_news001.shtml](http://www.alaskajournal.com/stories/050809/loc_img_news001.shtml)



In April 2008, the Council discussed in which step of the IPHC CEY determination would the charter sector allocation be deducted from the total available CEY. The next two paragraphs summarize the IPHC staff recommendation that the appropriate action would be for the Council to request that the IPHC set a combined catch limit for the charter sector and the commercial setline fishery in pounds.

The IPHC believes that all recreational fishing should be included in any allocation framework, to avoid leakage from the charter into the unguided sector, should a charter limit be reached or to artificially avoid being reached. In any case, use of a combined catch limit would be simpler, more transparent, and more comprehensible to the user groups. The IPHC believes this approach also is more equitable because it places both sectors on an equal footing concerning the impacts and effects of PSC and other non-directed removals. Thus, both the charter and commercial sectors would share in the benefits and costs of managing the resource for long term sustainability under a combined catch limit. In correspondence and testimony, the IPHC staff recommended that the IPHC could approve a combined charter and commercial catch limit for allocative use by the Council. Placing recreational fisheries within a combined catch limit would also allow the IPHC's policy of phasing in changes in catch limits to be applied equitably to both user groups.

There is precedent for a combined catch limit. Halibut catch, by all directed fishery users, is managed with one overall catch limit in IPHC Area 2A (WA/OR/CA). A catch sharing plan, developed in 1988 by the Pacific Fishery Management Council, provides for further allocation of the catch limit to the recreational, commercial, and tribal fisheries. In IPHC Area 2B (British Columbia), all sport and commercial catches have been managed within a single, combined catch limit since 2004. In both instances, domestic federal and/or state/province agencies are involved with further management of sector fisheries to most effectively achieve the IPHC catch limit.

Under the status quo, the IPHC:

1. Computes Total Constant Exploitation Yield, or TCEY (Exploitable Biomass times Harvest Rate)
2. Subtracts from that Other Removals to determine Fishery CEY. Other Removals is comprised of guided and unguided sport harvest, subsistence, wastage, and bycatch mortality. The IPHC includes all mortality from guided and unguided sport and subsistence harvest in Other Removals; however, for wastage and bycatch, the IPHC only includes the mortality of fish above a certain length. Prior to 2011, that length was 32 inches (O32). In 2011, the IPHC included mortality from fish larger than 26 inches (O26) in bycatch and wastage.
3. If the Fishery CEY is greater than the previous year's commercial catch limit, the staff Catch Limit Recommendation (CLR) is the previous year's commercial catch limit PLUS one third of the difference between the two. If the Fishery CEY is less than the previous year's commercial catch limit, then the CLR is the Fishery CEY.

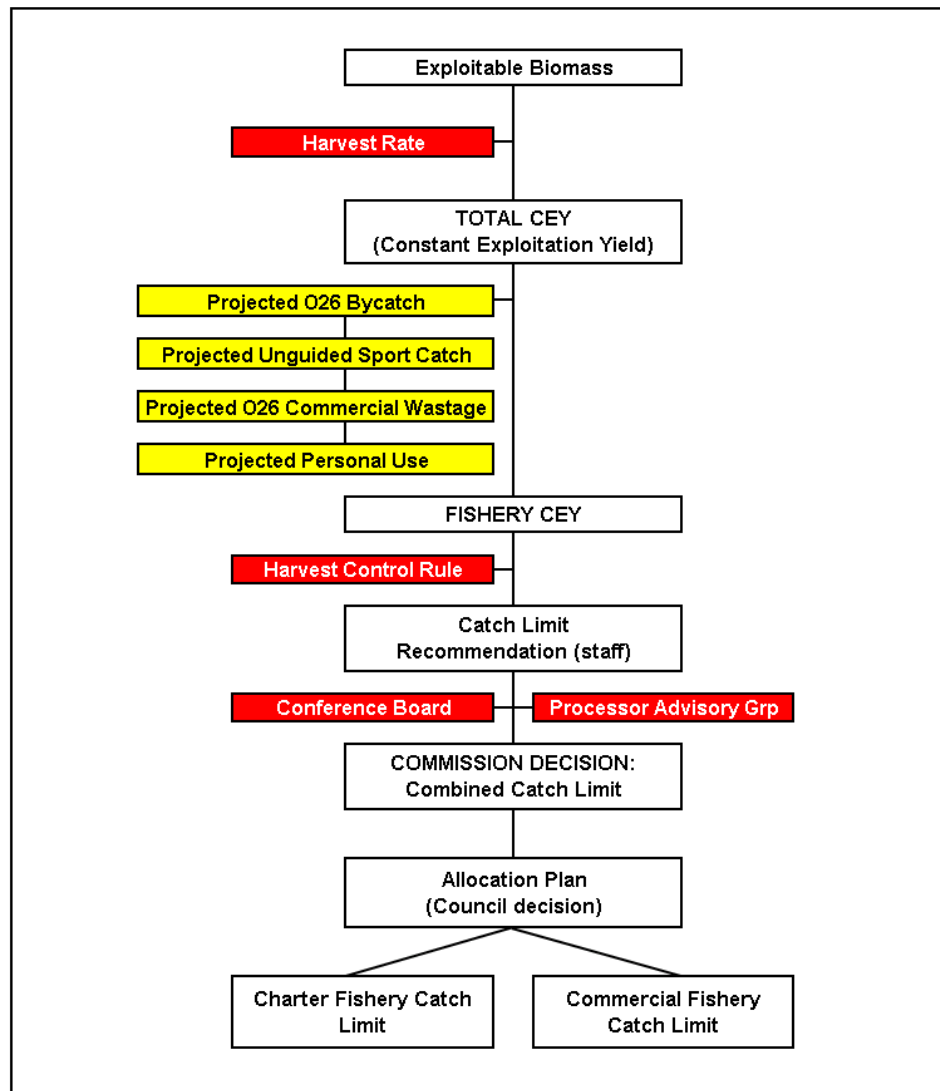
From the early 2000s through 2010, if the Fishery CEY was lower than the previous year's catch limit, the CLR reduction was limited to 50 percent of the difference between the previous year's commercial catch limit and the Fishery CEY. Thus, under this "Slow Up Fast Down" (SUFastD) policy, the commercial catch limit was responsive to changes in abundance as well as changes in assessment methodology without causing abrupt annual fluctuations. In 2011, Commission staff determined that the stock modeling simulations that gave support to the SUFastD policy did not capture the current conditions faced by the stock (Hare 2011).

Since 2004, the biomass of halibut available for harvest (exploitable biomass) has been in a downward trajectory due to decreasing recruitment and harvest rates above target. Because realized harvest rates have been in excess of the target harvest rate (20%) and each subsequent annual exploitable biomass estimate has been lower than the previous year's estimate, the target harvest rate could never be met when only 50% of the intended reduction in removals is taken under SUFastD. Thus, for the 2011 fishery, IPHC staff recommended a "Slow Up Full Down" (SUFullD) adjustment. Under the SUFullD adjustment, if the Fishery CEY was greater than the previous year's commercial catch limit, then the IPHC staff's

CLR increased by only 33.3 percent of the difference between the previous year's commercial catch limit and the Fishery CEY. If the Fishery CEY was lower than the previous year's catch limit, the CLR equals the Fishery CEY. The Commission adopted the staff recommendation and shifted its harvest control rule to apply the SUFullID policy to implement the full reductions in catch limits identified by the stock assessment in 2011.

Under a combined charter/commercial catch limit system, the IPHC would:

1. Compute Total Constant Exploitation Yield, or TCEY (Exploitable Biomass times Harvest Rate)
2. Subtract from TCEY the Other Removals to determine Fishery CEY. Other Removals would now include only unguided sport harvest, subsistence, O26 wastage, and O26 bycatch mortality.
3. The Fishery CEY is the basis of the combined commercial + charter fishery catch limit. The SUFullID control rule is applied as before to determine the staff's CLR, i.e., if the Fishery CEY is greater than the previous year's Catch Limit, the staff's CLR for the subsequent year would be the previous year's Catch Limit PLUS one third of the difference between the two. If the Fishery CEY is less than the previous year's Catch Limit, then the CLR equal the Fishery CEY.



**Figure 12** The IPHC stock assessment and charter and commercial catch limit setting process (Source: IPHC).

Option 1

Option 1 would set the allocation for the charter sector as a percentage of a combined charter and commercial catch limit. The combined catch limit would be set by the IPHC if this option is selected, but the IPHC has not historically calculated the combined catch limit. The allocation percentage to the charter sector would be determined by dividing 125 percent of the historical charter catches by the sum of the combined commercial catch limits and charter harvests, over the years selected. The formula used for the calculation of Options 1a and 1b is shown below:

$$Charter\% = \frac{(CHarv_{1995-1999} * 1.25)}{(CHarv_{1995-1999} + CL_{1995-1999})}$$

In the formula, “Charter%” represents the percentage of a combined charter and commercial sector fishery catch limit, to be developed by the IPHC,<sup>50</sup> that is set aside as the charter allocation. “CHarv” is the sum of the charter sector’s harvest over the years included in the allocation formula. “CL” is the sum of the commercial catch limit set by the IPHC for the years included in the allocation. If this allocation alternative is selected, the allocation percentages for Area 2C and 3A would be fixed. The percentages may only be changed if the Council initiates an amendment to revise them. This is the same formula that was used to calculate the original GHL. Table 19 shows the raw data used in the formula, which should allow the reader to understand how the percentages were derived. The raw data are presented at the third decimal place. At the request of the Council, the allocation percentages that are calculated have been rounded to the nearest 1/10 of a percent.<sup>51</sup> The bottom row of Table 19 shows that the charter sector would be allocated 13.1 percent of the Area 2C combined catch limit, if Option 1a is selected. The allocation for Area 3A is equal to 14.1 percent of that area’s combined catch limit.

**Table 19            Option 1a – 125% of 1995–1999 average charter harvest (current GHL). (Source: ADF&G)**

Year	Area 2C					Area 3A				
	Charter Harvest	Commercial Catch Limit	Total	Char* 1.25	Charter %	Charter Harvest	Commercial Catch Limit	Total	Char* 1.25	Charter%
1995	0.986	9.000	9.986	1.233	12.3%	2.845	20.000	22.845	3.557	15.6%
1996	1.187	9.000	10.187	1.483	14.6%	2.822	20.000	22.822	3.527	15.5%
1997	1.034	10.000	11.034	1.292	11.7%	3.413	25.000	28.413	4.266	15.0%
1998	1.584	10.500	12.084	1.980	16.4%	2.985	26.000	28.985	3.731	12.9%
1999	0.939	10.490	11.429	1.173	10.3%	2.533	24.670	27.203	3.167	11.6%
Avg.				1.432	<b>13.1%</b>				3.650	<b>14.1%</b>

Table 20 shows that the charter sector would be allocated 17.2 percent of the Area 2C combined commercial and charter catch limit, if Option 1b is selected. The formula used to make the calculation is the same in Option 1a and 1b, but different years of data are used.

$$\text{Charter}\% = \frac{(\text{CHarv}_{2001-2005} * 1.25)}{(\text{CHarv}_{2001-2005} + \text{CL}_{2001-2005})}$$

The allocation for Area 3A is equal to 15.4 percent of that area’s combined catch limit. Option 1b yields an Area 2C allocation that is more than 4 percent larger than the combined catch limit in Option 1a. The Option 1b allocation for Area 3A is more than 1 percent larger than the combined catch limit in Option 1a.

<sup>50</sup> The Council would request that the IPHC set a combined charter and commercial sector catch limit each year. Currently, the IPHC does not generate that number.

<sup>51</sup> The number places after the decimal point and the allocation percentages have changed from previous drafts.

**Table 20 Option 1b – 125% of 2001–2005 average charter harvest.**

Year	Area 2C					Area 3A				
	Charter Harvest	Commercial Catch Limit	Total	Char* 1.25	Charter %	Charter Harvest	Commercial Catch Limit	Total	Char* 1.25	Charter %
2001	1.202	8.780	9.982	1.503	15.1%	3.132	21.890	25.022	3.915	15.6%
2002	1.275	8.500	9.775	1.594	16.3%	2.724	22.630	25.354	3.404	13.4%
2003	1.412	8.500	9.912	1.765	17.8%	3.382	22.630	26.012	4.227	16.3%
2004	1.750	10.500	12.250	2.187	17.9%	3.668	25.060	28.728	4.586	16.0%
2005	1.952	10.930	12.882	2.441	18.9%	3.689	25.470	29.159	4.611	15.8%
Avg.				1.898	<b>17.2%</b>				4.149	<b>15.4%</b>

Source: ADF&G

Option 1c uses a slightly different formula to calculate the percentage of the combined commercial and charter catch limit that would be allocated to the charter sector. The formula for this option is shown below:

$$\text{Charter}\% = \frac{\text{CurrentGHL}_{2004}}{\text{CHarv}_{2004} + \text{CL}_{2004}} * 100$$

“CHarv” is the charter sector’s harvest during 2004. “CL” is the commercial catch limit set by the IPHC for 2004. Charter% is the percentage of the combined charter and commercial allocation that the charter sector is allocated. The allocation calculation and results for Option 1c are shown in

Table 21. This option yields the smallest charter allocation of all the Option 1 allocations for Area 2C and Area 3A.

When the Council adopted this option for analysis in October 2007, the GHL poundages in Area 2C and 3A had never changed. However, the Area 2C GHL was reduced to 931,000 lb in 2008, and was further reduced to 788,000 lb in 2009 because of a smaller CEY. The Area 2C GHL has remained at 788,000 lb through 2011. The intent of this option is to set a fixed percentage for the charter allocation. To achieve a fixed percentage, an assumption needed to be made regarding the appropriate baseline GHL poundage. This analysis assumes the current GHL should be set equal to the GHL in place the year the Council’s motion was passed. This assumption was made, because allowing the current GHL to vary would change the allocation percentage.

**Table 21 Option 1c – current GHL as percent in 2004.**

Year	Area 2C					Area 3A				
	Charter Harvest	Commercial Catch Limit	Total	Char* 1.25	Charter %	Charter Harvest	Commercial Catch Limit	Total	Char* 1.25	Charter %
2004	1.750	10.500	12.250	1.432	<b>11.7%</b>	3.668	25.060	28.728	3.650	<b>12.7%</b>

Source: ADF&G

Option 1d calculates the charter sector allocation by dividing the 2005 charter harvest by the sum of the 2005 charter harvest and the 2005 commercial catch limit. The actual formula used is shown below:

$$\text{Charter}\% = \frac{CHarv_{2005}}{(CHarv_{2005} + CL_{2005})} * 100$$

The results of this calculation show that the Area 2C charter allocation would equal 15.2 percent of a combined charter and commercial catch limit (Table 22). In Area 3A, the percentage of the combined catch limit would be set at 12.7 percent. Once set, the percentages derived under Option 1 would not change, unless the Council develops a new amendment to change them. However, fluctuations in the combined catch limit set by the IPHC would result in changes to the number of pounds allocated to the charter sector.

**Table 22 Option 1d – 2005 charter harvest as a percent.**

Year	Area 2C				Area 3A			
	Charter	Longline	Total	% Alloc	Charter	Longline	Total	% Alloc
2005	1.952	10.930	12.882	<b>15.2%</b>	3.689	25.470	29.159	<b>12.7%</b>

Option 2

Option 2, Element 1, would set the charter allocation at a fixed number of pounds. The pounds allocated to the charter sector would never vary, unless resource conservation issues require a reduction in the allocation. Under extreme stock collapse conditions, the commercial allocation could be set at zero pounds, before the charter allocation would be reduced.

Three options were considered to determine the fixed number of pounds. Only two use the same time periods that were used under the percentage-based allocation options. The allocation is calculated using the simple arithmetic mean of the average charter harvest. The results are reported in Table 23, Table 24, and Table 25. Table 23 shows that the charter sector would be allocated 1.43 Mlb for Area 2C and 3.65 Mlb for Area 3A. The allocation is based on the same formula used to calculate the original GHL.

**Table 23 Option 2a – 125% of the 1995-1999 average charter harvest (Mlb).**

Year	Area 2C	Area 3A
1995	0.986	2.845
1996	1.187	2.822
1997	1.034	3.413
1998	1.584	2.985
1999	0.939	2.533
Allocation	<b>1.43</b>	<b>3.65</b>

Source: ADF&G

Note: This is the current GHL formula but changes in the allocation are not linked to changes in the CEY.

**Table 24 Option 2b – 125% of the 2000-2004 average charter harvest (Mlb).**

Year	Area 2C	Area 3A
2000	1.132	3.140
2001	1.202	3.132
2002	1.275	2.724
2003	1.412	3.382
2004	1.750	3.668
Allocation	<b>1.69</b>	<b>4.01</b>

Source: ADF&G

**Table 25 Option 2c – 125% of the 2001-2005 average charter harvest.**

Year	Area 2C	Area 3A
2001	1.202	3.132
2002	1.275	2.724
2003	1.412	3.382
2004	1.750	3.668
2005	1.952	3.689
Allocation	<b>1.90</b>	<b>4.15</b>

Source: ADF&G

Because the charter harvest was larger in 2000 through 2004 than in 1995 through 1999, the charter allocation under Option 2b (Table 24) is larger. Option 2b yields an allocation that is 1.69 Mlb in Area 2C and 4.01 Mlb in Area 3A. The Area 2C allocation increased by 260,000 lb relative to the Option 2a allocation of 1.43 Mlb. In Area 3A, the allocation increased by 360,000 lb. While the allocation increased by more pounds in Area 3A, the percentage change in the allocation was greater in Area 2C.

The largest charter allocation is generated using Option 2c (Table 25). That allocation option was based on the years 2001 through 2005. Option 2c yields an Area 2C allocation that is 570,000 lb more than Option 2a. In Area 3A, the allocation is 500,000 lb larger. Relative to the current GHL years, the Area 2C allocation increases more in both pounds and percentage, when compared to the Area 3A allocation, using the years 2001 through 2005.

By receiving a fixed poundage allocation, the charter sector is insulated from fluctuations in halibut stock abundance. Under a percentage based allocation, stock abundance changes would cause the charter sector's allocation to vary. The fixed poundage allocation has always appealed to some members of the charter sector, because it eliminates uncertainties associated with its future allocation. A fixed allocation comes at a cost, because charter LEP holders will not receive an increased share when the CEY increases.

#### Option 2 Suboption

A suboption under the fixed poundage option would increase or decrease the charter allocation in predefined steps, whenever the halibut CEY changes by specified amounts. The suboption does not apply to Option 1 or Option 3, because those allocations are already directly linked to changes in a combined catch limit. Selecting the Option 2 suboption would result in an allocation to the charter sector that behaves much more like Option 1, than a fixed poundage allocation. Anytime the CEY changes by a predetermined amount, the charter allocation would be revised to the corresponding allocation. Allowing the charter allocation to vary with CEY removes the security of having a fixed-poundage allocation. For example, if the fixed-poundage allocation was implemented with 2007 as the base year, the 2008 CEY would have triggered a substantial reduction in the Area 2C allocation. However, if Option 2 was not modified to include the stair step up and down, the commercial sector would have been required to absorb the entire reduction of available halibut.

The suboption under Option 2 would modify the charter allocation, based on predefined steps. The Council requested that those steps be based on changes to either (1) the proposed baseline years, (2) the total CEY, or (3) the baseline of the combined catch limit.

The CEYs for the years 1995 through 2007 are based on area stock assessments (Table 26). The CEY projections presented for 2008 and later are based on the coast-wide assessment. In Area 2C, the use of years before 2008 to determine the charter sector allocation, especially if the CEYs are not recalculated using the coast-wide assessment, would be more likely to trigger a reduction in the charter allocation in the near future. The IPHC staff was asked to provide estimates of the 2006 through 2008 CEY and the 2006 through 2008 combined catch limit using the coast-wide assessment. The data were not available to estimate the CEY for the combined catch limit retrospectively, prior to 2008.

The IPHC staff advised that *retrospective projections of what the combined charter and commercial catch limits might have been in the past are inappropriate*. The problem with presenting retrospective combined catch limits is that they would only be correct for any single year. Had those limits been applied, then all future biomasses would be different and those could not be predicted. The removals would have been different, the biomasses changed, the SUFastD adjustments would have differed, and the IPHC's final recommendations would be different. Thus, while one could compute what a combined limit would have been in 2006, one would not be able to predict what the combined limit would have been in 2007, since the age, size, and area structure of the population would have changed. The retrospectively projected combined limit would be different than the actual 2007 combined catch limit. Hence, retrospective projections of combined catch limits would contain systematic errors.

**Table 26 Area 2C and 3A Total CEY (Mlb) by year, 1995–2007 and projected Area 2C and 3A CEY (Mlb) 2008–2013. Source: IPHC**

Year	2C	3A
1995	10.03	27.89
1996	11.19	27.25
1997	12.35	33.39
1998	12.92	32.97
1999	12.50	32.02
2000	11.15	26.62
2001	10.80	29.35
2002	11.18	29.63
2003	11.14	31.28
2004	14.31	34.83
2005	14.55	34.91
2006	13.70	32.02
2007	11.40	37.20
2008*	6.50	29.00
2009*	5.57	28.01
2010*	8.40	37.30
2011*	9.30	41.50
2012*	10.10	44.90
2013*	10.60	47.10

Note: \* means the CEY is based on a coastwide assessment.

The tables below show changes in the charter allocation, when the CEY changes a specified percentage from the baseline amount under the suboption to Option 2. These tables show the initial allocation under



Option 2 and the revised allocation, if the CEY changes under the suboption, by the percentages listed in the table. Table 27 shows changes in the charter allocation if Option 2a were selected. Under the suboption, no changes occur to the charter allocation when the CEY increases or decreases by less than 15 percent from the baseline amount. Increases or decreases greater than or equal to 15 percent would trigger changes in the charter allocation. The first change increases or decreases the initial allocation by 15 percent. Each additional 10 percent increase or decrease in the CEY triggers an additional 10 percent increase or decrease in the charter sector's allocation. In Area 2C, the first increase or decrease is triggered by a 15 percent increase or decrease in the CEY and results in the allocation increasing or decreasing 210,000 lb. In Area 3A, the allocation is increased or decreased by 550,000 lb by a 15 percent increase or decrease in the CEY. Each additional 10 percent increase or decrease in the CEY results in the charter sector's allocation increasing or decreasing 140,000 lb in Area 2C, and 360,000 lb in Area 3A.

Future CEYs and combined catch limits from 2008 through 2015 can be projected using the starting points that were identified by the Council (where data are available); however IPHC staff recommended that hind casting combined catch limits for prior years was not appropriate because they would only be correct for any single year as described above.

Table 27 Increases and decreases to charter allocation under Option 2a, suboption 2 at given changes in the CEY.  
Source: ADF&G

Area 2C			Area 3A		
Change in CEY relative to charter allocation under option 2a	Charter allocation (Mlb)		Change in CEY relative to charter allocation under option 2a	Charter allocation (Mlb)	
+45% to +55%	2.08		+45% to +55%	5.29	
+35% to +45%	1.93		+35% to +45%	4.93	
+25% to +35%	1.79		+25% to +35%	4.56	
+15% to +25%	1.65		+15% to +25%	4.20	
<b>+15% to +25%</b>	<b>1.43</b>	<b>(charter allocation under Option 2a)</b>	<b>+15% to +25%</b>	<b>3.65</b>	<b>(charter allocation under Option 2a)</b>
-15% to -25%	1.22		-15% to -25%	3.10	
-25% to -35%	1.07		-25% to -35%	2.74	
-35% to -45%	0.93		-35% to -45%	2.37	
-45% to -55%	0.79		-45% to -55%	2.01	

Table 28 shows projections of charter allocations under the various Option 2a suboptions. There are four suboptions that define the starting point from where changes are measured, based on CEY. Three of the suboptions define the starting point using CEYs based on area-wide IPHC estimates (prior to 2008). The years used in those suboptions to determine the baseline CEY starting point are 1995 through 1999, 2000 through 2004, and 2001 through 2005. One suboption using 2008 as the baseline CEY starting point is based on the coast-wide calculation. And one suboption measures changes from the 2008 combined catch limit.

The Area 2C charter allocations in Table 28 show that the alternatives that use different types of starting points yield very different outcomes. For example, suboptions based on CEYs using the area-wide calculation of CEY tend to yield allocations that are similar. They all begin with a 2008 allocation that is between 790,000 lb and 930,000 lb. Each allocation increases, over time, and peaks at 1.43 Mlb. The

option using 2008 CEY based on the coast-wide stock assessment methodology starts with a 1.43 Mlb charter allocation in 2008, and increases to 2.36 Mlb in 2015. The suboption based on the combined catch limit is 1.43 Mlb over the entire time period considered. These allocations indicate that using historical CEYs may result in allocations that are only about one-half of the allocation that would result if 2008 CEYs based on the coast-wide method were used.

Table 28 shows the charter allocations that would result from CEY changes under Option 2b. Because the initial allocation is larger, the changes in the allocation at each step are also larger. In Area 2C, the initial 15 percent change in the allocation increases or decreases the amount by 250,000 lb. Each additional 10 percent increase or decrease in the CEY increases or decreases the allocation by 170,000 lb. In Area 3A, the initial increase or decrease is 600,000 lb, and each additional 10 percent adjustment to the CEY adjusts the allocation by 400,000 lb.

**Table 28 Projected changes to charter allocations (2008 through 2015) under Option 2a presented for five baseline suboptions (Mlb).**

Option 2a	Suboption: charter allocation increases or decreases from the charter allocation under Option 2a if the CEY increases or decreases by at least 15% from:				
	Average 1995–1999 CEY	Average 2000–2004 CEY	Average 2001–2005 CEY	2008 CEY	2008 Combined Catch Limit
	Area 2C				
Year					
2008	0.93	0.93	0.79	1.43	1.43
2009	0.93	0.93	0.93	1.43	1.43
2010	1.07	1.07	1.07	1.79	1.43
2011	1.22	1.07	1.22	1.93	1.43
2012	1.43	1.43	1.22	2.08	1.43
2013	1.43	1.43	1.43	2.22	1.43
2014	1.43	1.43	1.43	2.36	1.43
2015	1.43	1.43	1.43	2.36	1.43
	Area 3A				
2008	3.65	3.65	3.65	3.65	3.65
2009	3.65	3.65	3.65	3.65	3.65
2010	4.20	4.20	4.20	4.56	3.65
2011	4.93	4.93	4.56	4.93	4.20
2012	5.29	5.29	4.93	5.29	4.56
2013	5.29	5.65	5.29	5.65	4.93
2014	5.65	5.65	5.29	6.01	5.29
2015	5.65	5.65	5.29	5.65	5.29

Source: IPHC projections of future CEYs and combined commercial and charter catch limits.

**Table 29** Increases and decreases to charter allocation under Option 2b, suboption 2 at given changes in the CEY. (Source: ADF&G).

Area 2C		Area 3A	
Change in CEY relative to charter allocation under option 2b	Charter allocation (Mlb)	Change in CEY relative to charter allocation under option 2b	Charter allocation (Mlb)
+45% to +55%	2.45	+45% to +55%	5.82
+35% to +45%	2.29	+35% to +45%	5.42
+25% to +35%	2.12	+25% to +35%	5.01
+15% to +25%	1.95	+15% to +25%	4.61
<b>+15% to +25%</b>	<b>1.69</b>	<b>+15% to +25%</b>	<b>4.01</b>
-15% to -25%	1.44	-15% to -25%	3.41
-25% to -35%	1.27	-25% to -35%	3.01
-35% to -45%	1.10	-35% to -45%	2.61
-45% to -55%	0.93	-45% to -55%	2.21

Table 29 shows the projected allocation, based on selecting various suboptions under Option 2b. The same percentage changes are triggered each year under Options 2a through 2c. The only difference in the outcomes is the starting allocation. Because the fixed allocation is larger under Option 2b than Option 2a, the allocations under the suboptions are also larger. However, the trends of increases and decreases in allocation are the same. Allocations range from 930,000 lb in 2008 (under the 2001 through 2005 CEY suboption) to 2.79 Mlb in 2015 (under the 2008 CEY suboption).

Table 31 shows the charter allocations that would result from CEY changes under Option 2c. Because the initial allocation is larger than either of the other two options, the changes in the allocation, at each step, are also larger. In Area 2C, the initial 15 percent change in the allocation increases (or decreases) the amount by 280,000 lb. Each additional 10 percent change increases (or decreases) the allocation by 190,000 lb. In Area 3A, the initial change is 620,000 lb, and each additional 10 percent change alters the allocation by 410,000 lb.

**Table 30 Projected changes to charter allocations (2008 through 2015) under Option 2b presented for five baseline suboptions (Mlb).**

Option 2b	Suboption: charter allocation increases or decreases from the charter allocation under Option 2b if the CEY increases or decreases by at least 15% from:				
	Average 1995–1999 CEY	Average 2000–2004 CEY	Average 2001–2005 CEY	2008 CEY	2008 Combined Catch Limit
Year	Area 2C				
2008	1.10	1.10	0.93	1.69	1.69
2009	1.10	1.10	1.10	1.69	1.69
2010	1.27	1.27	1.27	2.12	1.69
2011	1.44	1.43	1.44	2.29	1.69
2012	1.69	1.69	1.44	2.45	1.69
2013	1.69	1.69	1.69	2.62	1.69
2014	1.69	1.69	1.69	2.79	1.69
2015	1.69	1.69	1.69	2.79	1.69
	Area 3A				
2008	4.01	4.01	4.01	4.01	4.01
2009	4.01	4.01	4.01	4.01	4.01
2010	4.61	4.61	4.61	5.01	4.01
2011	5.42	5.42	5.01	5.42	4.61
2012	5.82	5.82	5.42	5.82	5.01
2013	5.82	6.22	5.82	6.22	5.42
2014	6.22	6.22	5.82	6.62	5.82
2015	6.22	6.22	5.82	6.22	5.82

Source: IPHC projections of future CEYs and combined commercial and charter catch limits. Proposed allocations under Option 2b.

**Table 31 Increases and decreases to charter allocation under Option 2c, suboption 2 at given changes in the CEY. (Source: ADF&G).**

Area 2C		Area 3A	
Change in CEY relative to charter allocation under option 2c	Charter allocation (Mlb)	Change in CEY relative to charter allocation under option 2c	Charter allocation (Mlb)
+45% to +55%	2.75	+45% to +55%	6.02
+35% to +45%	2.56	+35% to +45%	5.60
+25% to +35%	2.37	+25% to +35%	5.19
+15% to +25%	2.18	+15% to +25%	4.77
<b>+15% to +25%</b>	<b>1.90</b>	<b>+15% to +25%</b>	<b>4.15</b>
	(charter allocation under Option 2c)		(charter allocation under Option 2c)
-15% to -25%	1.61	-15% to -25%	3.53
-25% to -35%	1.42	-25% to -35%	3.11
-35% to -45%	1.23	-35% to -45%	2.70
-45% to -55%	1.04	-45% to -55%	2.28

As stated earlier the allocations for the suboptions all follow the same trend for Options 2a through 2c. Because Option 2c is the largest fixed pound allocation, the suboption allocation projections are larger than those for Options 2a and 2b (Table 32). Option 2c allocation begins at 1.04 Mlb to 1.90 Mlb (depending on the suboption selected) and increases to as much as 3.13 Mlb in 2015 under the 2008 CEY suboption).

**Table 32 Projected changes to charter allocations (2008 through 2015) under Option 2b presented for five baseline suboptions (Mlb).**

Option 2c	Suboption: charter allocation increases or decreases from the charter allocation under Option 2c if the CEY increases or decreases by at least 15% from:				
	Average 1995–1999 CEY	Average 2000–2004 CEY	Average 2001–2005 CEY	2008 CEY	2008 Combined Catch Limit
Year	Area 2C				
2008	1.23	1.23	1.04	1.90	1.90
2009	1.23	1.23	1.23	1.90	1.90
2010	1.42	1.42	1.42	2.37	1.90
2011	1.61	1.69	1.61	2.56	1.90
2012	1.90	1.90	1.61	2.75	1.90
2013	1.90	1.90	1.90	2.94	1.90
2014	1.90	1.90	1.90	3.13	1.90
2015	1.90	1.90	1.90	3.13	1.90
	Area 3A				
2008	4.15	4.15	4.15	4.15	4.15
2009	4.15	4.15	4.15	4.15	4.15
2010	4.77	4.77	4.77	5.19	4.15
2011	5.60	5.60	5.19	5.60	4.77
2012	6.02	6.02	5.60	6.02	5.19
2013	6.02	6.44	6.02	6.44	5.60
2014	6.44	6.44	6.02	6.86	6.02
2015	6.44	6.44	6.02	6.44	6.02

Source: IPHC projections of future CEYs and combined commercial and charter catch limits.

In summary, for Area 2C, the 2008 suboption based on CEY always yields the largest allocation over the 2008 through 2015 time period. The smallest allocation is generated using the 2001 through 2005 CEY. Variation over the years considered is a result of the CEY changing from the base period to the future years. Using the combined catch limit resulted in a constant allocation over the 2008 through 2015 time period. This occurs because the projected combined catch limit was not projected to change by 15 percent or more between 2008 and 2015. In Area 3A, all of the projected allocations were within the proposed allocations under Option 2b at the time the projections were prepared in 2008. As discussed earlier, actual CEYs from 2008 through 2011 have been lower than those projected by IPHC in 2008. While these lower CEYs would result in lower allocations to the charter sector for all options considered in this analysis, the effects of the options described here would still be applicable to lower allocations.

### Option 3

Option 3 would determine the initial charter allocation by using 50 percent of the result of the percentage-based allocation and 50 percent of the fixed-poundage allocation, over the same historical period of time. The years used to determine these allocation amounts are the same year combinations used for Option 2 to calculate the fixed poundage allocation. Option 3a is based on the percentages for Area 2C and Area 3A that were generated under Option 1a and the fixed pounds that were generated under Option 2a. The percentages from Option 1a and the fixed pounds from Option 2a were then divided by 2, to calculate the

allocation estimates for Option 3a. The fixed poundage component of this option can be viewed as the “floor” of the charter allocation. If there is a sufficient amount of the combined catch limit, the charter sector would always receive that minimum allocation. The remainder of its allocation for the common pool would be determined by the percentage of the combined catch limit that the charter sector would be apportioned, if adopted. That latter amount would fluctuate when the combined catch limit changes.

Some members of the charter sector indicated to the Council that a fixed poundage charter allocation is preferable to an allocation that varies with halibut stock abundance (percentage allocation) because eliminates uncertainties about halibut biomass for purposes of business planning for the upcoming charter season. However, fixed poundage allocations also come at a cost to the charter sector because the charter allocation would not receive an increased allocation if halibut abundance increases. Thus, the Council elected to develop Option 3 to provide the charter sector with a total allocation that combines a minimum fixed number of pounds with an additional number of pounds that adjusts with changes in halibut abundance.

Option 3b is based on the years 2000 through 2004. Because those years were not an alternative under Option 1, the percentage was calculated for Option 3 using the same formula used in Options 1a and 1b. One-half of the resulting percentage was used in Option 3b. The fixed poundage amount was calculated as half of Option 2b. Option 3c is calculated by taking half of the percentage calculated for Option 1b and half of the pounds calculated under Option 2c. The results of those calculations are shown in Table 33.

**Table 33            Option3a–Option 3c based on 50% fixed pounds and 50% fixed percentage.**

<b>Option</b>	<b>Area 2C</b>		<b>Area 3A</b>	
	<b>%</b>	<b>Mlb</b>	<b>%</b>	<b>Mlb</b>
<b>3a (125% of 1995-1999)</b>	6.5	0.72	7.1	1.82
<b>3b (125% of 2000-2004)</b>	8.2	0.85	8.0	2.01
<b>3c (125% of 2001-2005)</b>	8.6	0.95	7.7	2.07

Source: ADF&G

The Council requested that the analysis consider the impacts that changes in the combined catch limit would have on this option.

### **Future Harvest Projections**

During the October 2007 Council meeting, the Council, SSC, and AP reviewed projections of charter harvest for the 2006 through 2015 fishing years, in a previous draft of this analysis. The SSC recommended that the projections be revised, using a different model, and that the number of years projected forward be decreased. This analysis now uses an ARIMA model, with ADF&G harvest estimates from 1996 through 2006.<sup>52</sup> Data used in the model for Area 2C and Area 3A are shown in Table 34.

Harvest is the historical charter harvest, “SE” (yield) is the standard error of the yield variable, “L95%CI” is the lower bound of the 95 percent confidence interval, and “U95%CI” is the upper bound of the 95 percent confidence interval. The ARIMA model includes a weighting system that accounts for the standard errors associated with ADF&G harvest estimates, autoregressive data components, and moving average data components. Under this model, revised charter harvest projections were made for the 2007 through 2011. The shorter projection period was used, because uncertainty of the results increases as the time increases between the actual harvest data and the year projected.

<sup>52</sup> See section7/Appendix A for a more complete description of the ARIMA model that was used.

**Table 34 Charter harvest (in Mlb) and standard errors.**

Year	Harvest	SE(Yield)	L95%CI	U95%CI	RP
Area 2C					
1996	1.19	0.07	1.051	1.322	5.8%
1997	1.03	0.06	0.914	1.153	5.9%
1998	1.58	0.22	1.153	2.015	13.9%
1999	0.94	0.05	0.835	1.043	5.6%
2000	1.13	0.07	1.001	1.258	5.8%
2001	1.20	0.06	1.079	1.326	5.2%
2002	1.28	0.07	1.143	1.408	5.3%
2003	1.41	0.07	1.281	1.543	4.7%
2004	1.75	0.09	1.582	1.918	4.9%
2005	1.95	0.09	1.767	2.138	4.8%
2006	1.80	0.09	1.628	1.979	5.0%
Area 3A					
1996	2.82	0.09	2.648	2.995	3.1%
1997	3.41	0.11	3.201	3.625	3.2%
1998	2.98	0.11	2.771	3.199	3.7%
1999	2.53	0.08	2.373	2.693	3.2%
2000	3.14	0.10	2.945	3.335	3.2%
2001	3.13	0.10	2.940	3.325	3.1%
2002	2.72	0.11	2.509	2.938	4.0%
2003	3.38	0.10	3.180	3.584	3.0%
2004	3.67	0.10	3.474	3.863	2.7%
2005	3.69	0.11	3.471	3.906	3.0%
2006	3.66	0.11	3.451	3.876	3.0%

Source: ADF&amp;G

Table 35 shows estimates of future charter harvests in Area 2C for the years 2007 through 2011. The harvest estimates are made based on the management measures that are expected to be in place during the year of the projection. In Area 2C, those measures include the length limit<sup>53</sup> imposed for 2007 and 2008. The harvest estimates also assume that the one-fish bag limit would be in place for 2009 through 2011. Projections for 2008 through 2011 include those management measures in addition to the prohibition on harvest by skipper and crew and the limit on fishing lines to six or the number of clients on board the vessel, whichever is less. Because management measures, like the one-fish bag limit, are expected to impact client demand, harvest projections are included that estimate demand change. Estimates are also made that assume the management measures do not impact client demand. Given the uncertainty regarding how client demand would change in Area 2C, an estimate using the average of the two methods has also been included. The average of the two methods would be used in this document when comparing projected harvest to the sector allocations. The harvest projections using the other demand assumptions are included here, but are not directly compared to the allocation options for simplicity.

The Area 2C harvest projection table is divided into four sections. Unadjusted projections are shown on the left side of Table 35. Harvest projections are reported in millions of pounds and are included in the field labeled "Removal Mlb." **The estimated standard errors and confidence intervals are probably too small (see Appendix A for a more complete discussion).** If the projections are too small, then we

<sup>53</sup>One halibut may be of any length and the second halibut must be less than 32 inches.

cannot be 95 percent confident that the harvest in those future years would fall within the bounds of the upper and lower confidence intervals.

The three sections on the right side of Table 35 show the projected charter harvests that are adjusted to account for new management measures and resultant changes in client demand. Columns under the “Status Quo-Less Effective” title, multiply the unadjusted projections by a factor of 0.771 in 2007 and 2008. The factor is reduced to 0.513, because of the different management measures that are expected to be in place in 2009 through 2011. These factors were derived using information developed by Northern Economics, Inc. as part of separate Area 2C and Area 3A management actions to limit charter growth under the GH. As discussed earlier, the upper and lower confidence intervals are calculated by multiplying the standard error by 1.96 and adding or subtracting the product to or from the adjusted harvest projection. The “Status Quo-Most Effective” section of the table adjusts the charter harvest projections by a factor of 0.739 in 2007 and 2008, and 0.422 in 2008 through 2011. The “Status Quo-Average Effective” was calculated using the average of the factors under the less and most effective estimates. The result is that the unadjusted harvest projections were multiplied by 0.771 in 2007 and 2008, and 0.513 in 2009 through 2011, to calculate the adjusted harvest estimate. These are the projected harvest levels that would be used to compare the sector allocations proposed in this analysis. None of these estimates include a shift down resulting from the national economy as the estimation analysis was conducted prior to the downshift in the economy.

**Table 35 Projected charter halibut harvests in Area 2C under the status quo, 1996–2011.**

Year	Unadjusted Projections				Status Quo-Less Effective			Status Quo-Average Effective			Status Quo-Most Effective		
	Removal (Mlb)	SE (Mlb)	L95% CI	U95% CI	Removal (Mlb)	L95% CI	U95% CI	Removal (Mlb)	L95% CI	U95% CI	Removal (Mlb)	L95% CI	U95% CI
1996	0.968	0.037	0.896	1.040									
1997	1.057	0.032	0.994	1.120									
1998	1.163	0.028	1.109	1.217									
1999	1.212	0.024	1.164	1.259									
2000	1.358	0.022	1.315	1.401									
2001	1.290	0.021	1.249	1.331									
2002	1.470	0.022	1.427	1.512									
2003	1.496	0.024	1.450	1.543									
2004	1.609	0.027	1.556	1.662									
2005	1.694	0.031	1.633	1.755									
2006	1.821	0.036	1.751	1.891									
2007	1.888	0.041	1.808	1.968	1.516	1.436	1.596	1.456	1.376	1.536	1.396	1.316	1.476
2008	1.940	0.046	1.850	2.030	1.558	1.468	1.648	1.496	1.406	1.586	1.434	1.344	1.524
2009	2.037	0.051	1.936	2.137	1.229	1.128	1.329	1.045	0.944	1.145	0.860	0.760	0.961
2010	2.106	0.057	1.995	2.217	1.271	1.160	1.382	1.080	0.969	1.191	0.890	0.778	1.001
2011	2.196	0.062	2.074	2.318	1.325	1.203	1.447	1.126	1.004	1.249	0.928	0.806	1.050

Source: NEI projections using ADF&G data

Note: The upper confidence interval is calculated by multiplying the standard error by 1.96 and adding the result to the harvest projection. The same procedure is followed to calculate the lower bound, except the multiple of the standard error is subtracted from the harvest projection.

Table 36 shows the harvest projections for Area 3A. Those projections include the skipper and crew harvest ban that is assumed to be in place through 2011. Management measures that are assumed to be in place for 2008 through 2011, are not expected to reduce client demand for trips. Therefore, the projections do not need to account for changes in client demand as do the projections in Area 2C.



**Table 36 Projected charter halibut harvests in Area 3A under the status quo, 1996–2011.**

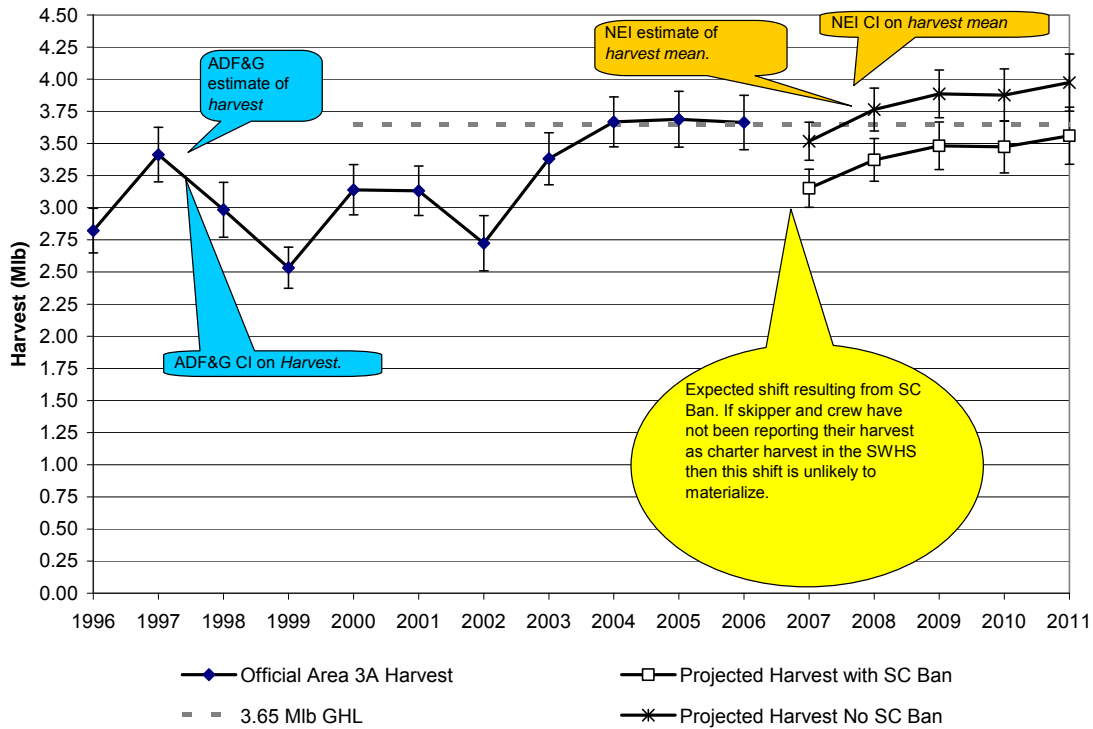
Year	Unadjusted Projection			Adjusted for Status Quo			
	Yield Mlb	SE (Mlb)	L95%CI	U95%CI	Yield Mlb	L95%CI	U95%CI
1996	2.771	0.042	2.688	2.853			
1997	2.856	0.034	2.789	2.923			
1998	2.976	0.028	2.921	3.031			
1999	2.745	0.024	2.698	2.792			
2000	3.096	0.024	3.050	3.143			
2001	3.414	0.027	3.361	3.467			
2002	3.022	0.033	2.957	3.087			
2003	3.310	0.041	3.230	3.389			
2004	3.710	0.049	3.614	3.806			
2005	3.351	0.058	3.239	3.464			
2006	3.698	0.067	3.567	3.828			
2007	3.518	0.076	3.369	3.666	3.152	3.003	3.300
2008	3.764	0.085	3.597	3.930	3.372	3.206	3.539
2009	3.886	0.094	3.701	4.071	3.482	3.297	3.667
2010	3.877	0.104	3.673	4.080	3.473	3.270	3.677
2011	3.973	0.113	3.751	4.196	3.560	3.338	3.782

Source: NEI projections using ADF&G data

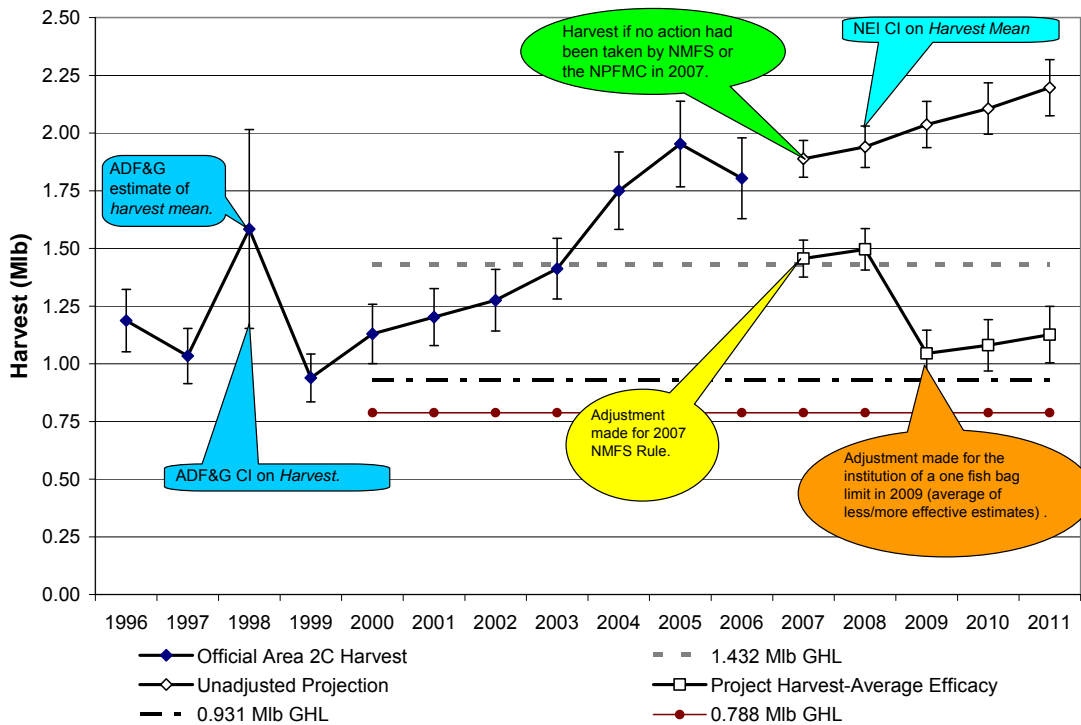
Note: The upper confidence interval is calculated by multiplying the standard error by 1.96 and adding the result to the harvest projection. The same procedure is followed to calculate the lower bound, except the multiple of the standard error is subtracted from the harvest projection.

The ban on skipper and crew harvest, imposed starting in 2007, is expected to reduce the unadjusted harvest projections by a factor of 0.896. NEI provided the estimated reduction percentage, based on earlier work on management measures for the GHL. This factor is used to adjust all of the projected years of harvest in Area 3A, 2007 through 2011.

*CAVEATS:* The accuracy of the adjusted harvest projections in both areas are subject to certain caveats. Charter harvest projections in Area 3A depend on whether or not skipper and crew have been reporting their halibut harvest as charter harvest. If so (as assumed in this analysis), then harvest is expected to be generally near or below the GHL. If skippers and crew have not been reporting their harvests while under charter in the SHWS, then no reduction in harvest from the skipper and crew ban on retaining halibut can be expected. Under those circumstances, actual harvest in Area 3A will more closely match the unadjusted harvest projection, which will exceed the GHL. Additionally, if the estimated effect of length restrictions, instituted in Area 2C in 2007 and 2008, is eroded by increasing harvest effort or increasing average weights, then overall actual harvest will match more closely the unadjusted harvest projection, which will exceed the GHL in Area 2C (Figure 13 and Figure 14).



**Figure 13** Past Area 3A Harvests Compared with Model Estimates of the Mean of Future Harvests Adjusted for a ban on Skipper and Crew (SC) Harvest.



**Figure 14** Past Area 2C Harvests Compared with Model Estimates of the Mean of Future Harvests Adjusted for actual 2007 Management Measures Continued through 2011.

## Comparing Charter Allocations to Projected Harvest

To determine the effect of the proposed charter sector allocation options, it is important to know whether the allocation would trigger additional management measure to constrain harvest, if management measures already in place could be relaxed, or if it is appropriate to continue the current management program. Note that management measures apply to the common pool of halibut allocated to the charter sector. Another class of halibut that would be available to the charter sector under the preferred alternative is guided angler fish (GAF). The concept of GAF is discussed in detail under Element 5. GAF that are leased from the commercial sector are outside of this discussion, because they are managed separately from the common pool of halibut for the charter sector.

If the initial allocation of common pool fish to the charter sector is just sufficient to meet the needs of the charter sector, then management measures would likely not change. However, the management agencies would need to impose more restrictive management measures to constrain charter harvests in the future, if the allocation is too small to cover client demand for harvesting halibut. Some measures could be relaxed or eliminated, if the client demand for trips and halibut is less than the sector allocation in that area.

When comparing the charter allocation to the projected harvest, it is important to consider the overall landscape of the halibut fishery. In October 2007, the SSC advised that projections of future charter harvests used in this analysis be reduced to the five-year period from 2007 to 2011, inclusive. The CEY in Area 2C was substantially reduced, beginning in 2008. The CEY in Area 3A was also reduced, but not to the same extent. The projected allocations to the commercial sector subsequently are smaller than historical averages. The allocations to the charter sector are also smaller than would have occurred under CEYs during 1995 through 2009, when its allocation is percentage based. IPHC CEY projections from 2010 through 2013 indicate that the CEY would increase in both areas, each year. The increasing CEYs would increase the commercial, and perhaps charter, allocations. Therefore, the years reported in this analysis cover a period of time that is expected to yield historically low commercial, and perhaps charter, allocations.

Estimates of combined commercial and charter catch limits are not available prior to 2008, and have been deemed inappropriate to determine by IPHC staff. Because the 2007 combined catch limit could not be estimated, the commercial catch limit and the charter GHL are summed as a proxy. The IPHC staff has provided estimates for the 2008 through 2015 combined catch limits. These estimates should not be considered projections. A series of caveats and assumptions associated with the projections are listed below:

1. Optimistic biomass projections depend heavily on the large 1999 and 2000 year classes.
2. Projections assume the biomass apportionment remains the same as estimated for 2007.
3. Projections do not adjust apportionment from 2007.
4. Projections assume the SUFD policy is strictly adhered to.
5. Projections assume that Other Removals for 2A, 2B does not include sport catch.
6. Projections assume that Other Removals for 2C, 3A does not include charter catch.
7. Projections assume a 0.2 target harvest rate in Areas 2 and 3, and a target 0.15 harvest rate in Area 4.
8. Projections assume other removals remain at 2007 levels and that an entire catch limit is taken.
9. Projections assume average recruitment as estimated for the 1990 through 1998 year classes.
10. Projections assume a static size-at-age, and use the same size at age for all regulatory areas.
11. The assessment still exhibits a retrospective behavior problem wherein successive assessments reduce the biomass level. That pattern of behavior is not mirrored in these projections.

Charter harvest estimates are compared to proposed allocation options to show which would fund the common pool without the need to impose management measures different from the status quo. The projected harvests and allocations for Area 2C are listed for each of the options (Table 37). Those options then are compared to the projected harvest for the years 2007 through 2011. For years when

the allocation is less than the lower bound of the 95 percent confidence interval, the numbers in the table are in **bold print** and underlined. Because **these** allocations are less than the projected harvest, additional management measures may be needed to keep the charter sector under its allocation. When the allocation is greater than the upper bound of the 95 percent confidence interval, the numbers in the table are only in **bold print**. Finally, when the allocation falls within the calculated 95 percent confidence interval for harvest, the allocation amount is in plain font.

**Table 37 Area 2C allocation amount (Mlb) and its relation to projected harvest, 2007–2011.**

Year	Percentage Based Allocations				Fixed Pound Allocation			Mixed Allocation			Prof. Alt.
	1a	1b	1c	1d	2a	2b	2c	3a	3b	3c	4*
2007	<b><u>1.34</u></b>	<b>1.77</b>	<b><u>1.19</u></b>	<b>1.54</b>	1.43	<b>1.69</b>	<b>1.90</b>	1.38	<b>1.66</b>	<b>1.55</b>	1.54
2008	<b><u>1.04</u></b>	<b><u>1.37</u></b>	<b><u>0.93</u></b>	<b><u>1.19</u></b>	1.43	<b>1.69</b>	<b>1.90</b>	<b><u>1.23</u></b>	1.47	1.41	1.19
2009	<b><u>0.89</u></b>	<b>1.18</b>	<b><u>0.80</u></b>	1.03	<b>1.43</b>	<b>1.69</b>	<b>1.90</b>	<b>1.16</b>	<b>1.39</b>	<b>1.35</b>	1.03
2010	<b><u>0.89</u></b>	1.17	<b><u>0.79</u></b>	1.02	<b>1.43</b>	<b>1.69</b>	<b>1.90</b>	1.16	<b>1.38</b>	<b>1.35</b>	1.02
2011	<b><u>0.92</u></b>	1.22	<b><u>0.83</u></b>	1.07	<b>1.43</b>	<b>1.69</b>	<b>1.90</b>	1.18	<b>1.41</b>	<b>1.36</b>	1.07

Source: IPHC projections using NEI harvest projections from ADF&G data.

Note: For years in bold and underlined print, the allocation is less than projected harvest; for years shown in bold, but not underlined, the projected harvest is under the allocation; and for years with normal fonts the allocation is within the 95% confidence interval of projected harvest.

\* The comparison between target harvest and projected harvest was not made, because it is the only alternative that adjusts charter angler harvest regulations before the season to constrain projected harvest to target harvest. Therefore, if the Preferred Alternative were in place, it is assumed that charter harvest would equal projected harvest.

Options 1a through 1d show the projected poundage that would result from the percentage based allocation options during the years 2007 through 2011 (Table 37). Under Options 1a and 1c, the charter allocation is projected to be less than charter harvest during every year from 2007 through 2011. Options 1b and 1d would yield an allocation that is greater than projected harvest from 2009 through 2011. The smallest allocations are Options 1a and 1c, because they would assign the smallest percentage of the combined catch limit to the charter sector. Based on these projections, additional harvest restrictions would need to be placed on the charter sector to prevent it from exceeding its allocation under Options 1a and 1c. The fixed poundage options allocate the most poundage to the charter sector over the time period being considered. Options 2a, 2b, and 2c allocate 1.43 Mlb, 1.69 Mlb, and 1.90 Mlb, respectively. All Option 2 alternatives are projected to be sufficient to meet the charter sector harvest needs under status quo harvest regulations. The difference between the allocation and projected harvest for the largest allocations would likely allow charter angler regulations to be relaxed. Finally, the options that use 50 percent of a percentage allocation and 50 percent of a fixed poundage allocation are presented under Options 3a through 3c. All of those options are projected to fully fund the Area 2C charter sector harvest needs.

The percentage that the charter sector’s projected harvest differs from its projected allocation is provided in Table 38. In Area 2C, the charter fleet’s projected harvest<sup>54</sup> is expected to exceed its allocation, in three of the percentage based options (Options 1a, 1c, and 1d), every year from 2009 through 2011. Recall these are the years that the charter angler would be limited to a one-fish daily bag limit. Harvest by charter anglers under all the other options is projected to be less than the allocation from 2009 through

<sup>54</sup> Assumptions and methods used to develop the model are presented in an appendix, including those related to changes in client demand for charter trips. These estimates do not reflect changes that have occurred in the world economy since these data were collected.

2011. Only Options 1a and 1c are projected to result in harvests that exceed the allocation by more than 10 percent. Selecting those allocations could require regulatory actions to further restrict the Area 2C charter harvest. Economic conditions that differ from those present during the years used to determine these estimates will change demand for trips. Because the world and U.S. economies are currently weaker than they were from 1995 through 2005, the demand for charter trips in the future may be lower than projected in these estimates. As noted in the Executive Summary, ADF&G estimated in November 2009 the demand for halibut charters in 2009 dropped by over 20 percent from 2008 levels in Area 3A even though the management area experienced no major regulatory changes. This 20 percent drop in trips demanded is similar to the per unit reduction that other elements of Alaska’s tourist economy saw in 2009 (e.g., hotel rooms).

The projected harvests by charter anglers do not include any halibut leased as GAF. The increased harvest that may result from GAF would be a result of relaxing the charter angler daily bag limits or size limits, and those changes are not included in harvest projections. Also, GAF harvests are not counted against the common pool allocation. Therefore, GAF would not impact overages or underages projected here.

**Table 38 Percentage difference between harvest by charter anglers and the sector’s allocation under each Area 2C option.**

Year	Percentage Based Allocations				Fixed Pound Allocation			Mixed Allocation			Percentage *Preferred Alternative
	1a	1b	1c	1d	2a	2b	2c	3a	3b	3c	
2007	-9%	18%	-22%	6%	-2%	14%	23%	-5%	12%	6%	0%
2008	-44%	-9%	-62%	-25%	-5%	11%	21%	-21%	-1%	-6%	0%
2009	-17%	11%	-31%	-2%	27%	38%	45%	10%	25%	23%	0%
2010	-22%	8%	-37%	-6%	24%	36%	43%	7%	22%	20%	0%
2011	-22%	8%	-36%	-6%	21%	33%	41%	4%	20%	17%	0%

Source: IPHC projections using NEI harvest projections from ADF&G data.

\* The Preferred Alternative would have the same result as Option 1d, if the regulations were not adjusted prior to the start of the fishing year. It is assumed that the harvest of common pool halibut by charter anglers and its allocation would be the same, because of the pre-season harvest regulation adjustments. It is unlikely the actual difference will be zero, but it is not possible to determine what the difference will be. In the future, the difference from zero will depend on ADF&G’s ability to accurately project future harvest and that is also currently unknown.

While some options result in the projected harvests and allocations being similar, it does not mean that option is a superior management alternative. It simply means that the allocation results are closer to the harvest level than is expected to occur under the status quo management regime. Some members of the charter sector may argue that the status quo management measures are too strict. The one-fish bag limit could reduce client demand and net revenue generated by Area 2C charter businesses. Charter LEP holders may argue that a larger allocation that removes some of the recently imposed management measures (or limitations that might be implemented in the future) would be more acceptable. Commercial halibut harvesters, on the other hand, would likely argue that the pounds of halibut, generated by the QS they hold, are also being reduced by smaller CEYs. They could argue that the increases in ex-vessel price that result from the lower quantity of halibut produced, are not expected to fully offset the gross revenue reductions associated with the smaller harvest. These arguments, and the fact that the analysis cannot provide annual, quantitative estimates of net benefits to the Nation under each alternative, mean that the selection of an alternative must be based on the best judgment of the policy makers.

Table 39 shows the projected charter allocation in Area 3A, under each Element 1 option, for the years 2007 through 2011. Projected future harvests were provided by NEI, and estimates of combined commercial and charter catch limits were provided by IPHC staff. Bolded numbers indicate the charter sector’s allocation is projected to exceed its harvest at the 95 percent confidence level. Pounds listed in

normal fonts indicate the allocation falls within the 95 percent confidence interval of projected harvest. All of the allocation options for Area 3A are projected to meet or exceed charter harvests over the years being considered. Only under options 1c and 2a are the allocations not projected to exceed their harvest every year being considered. None of the options are projected to require more restrictive management measures over the years being considered.

**Table 39 Area 3A allocation amount and its relation to projected harvest, 2007–2011.**

Year	Percentage Based Allocations				Fixed Pound Allocation			Mixed Allocation			Percentage
	1a	1b	1c	1d	2a	2b	2c	3a	3b	3c	* Preferred Alternative
2007	<b>4.65</b>	<b>5.08</b>	<b>4.19</b>	<b>4.19</b>	<b>3.65</b>	<b>4.01</b>	<b>4.15</b>	<b>4.15</b>	<b>4.63</b>	<b>4.17</b>	<b>4.62</b>
2008	<b>3.89</b>	<b>4.25</b>	<b>3.51</b>	<b>3.51</b>	<b>3.65</b>	<b>4.01</b>	<b>4.15</b>	<b>3.77</b>	<b>4.20</b>	<b>3.83</b>	<b>3.87</b>
2009	<b>3.99</b>	<b>4.36</b>	<b>3.60</b>	<b>3.60</b>	<b>3.65</b>	<b>4.01</b>	<b>4.15</b>	<b>3.82</b>	<b>4.26</b>	<b>3.87</b>	<b>3.97</b>
2010	<b>4.27</b>	<b>4.66</b>	<b>3.85</b>	<b>3.85</b>	<b>3.65</b>	<b>4.01</b>	<b>4.15</b>	<b>3.96</b>	<b>4.41</b>	<b>4.00</b>	<b>4.24</b>
2011	<b>4.65</b>	<b>5.08</b>	<b>4.19</b>	<b>4.19</b>	<b>3.65</b>	<b>4.01</b>	<b>4.15</b>	<b>4.15</b>	<b>4.63</b>	<b>4.17</b>	<b>4.62</b>

Source: IPHC combined catch limit projections and NEI harvest projections from ADF&G data. The Preferred Alternative is the IPHC combined catch limit projections multiplied by the 14.0 percent allocation to the charter sector under Option 4, Trigger 4. The target harvest under the Preferred Alternative is compared to the projected harvest, because under Option 4, Trigger 4 the charter angler’s harvest regulations are not increased beyond the two-fish daily bag limit to expand charter harvest to equal to target harvest.

Note: For years in bold and underlined print, the allocation is less than projected harvest, years that are shown in bold, the projected harvest is under the allocation, and years with normal fonts the allocation is within the 95 percent confidence interval of projected harvest.

Table 40 shows the percentage difference between the Area 3A charter sector harvest and allocation. The fixed pound allocations show that the percentage is decreasing. The decreasing percentage is a result of the projected harvest increasing, while the allocation remains constant. Option 2a is close to having harvest equal the allocation in 2011. If the trend continues into the future, additional management measures may be required to keep the charter sector within its allocation. The percentage is increasing under the percentage based allocations. This indicates that the percentage based allocations are not projected to require more restrictive management measures over the time period considered.

**Table 40 Percentage difference between charter harvest and its allocation under each Area 3A option.**

Year	Percentage Based Allocations				Fixed Pound Allocation			Mixed Allocation			Pref. Alt.
	1a	1b	1c	1d	2a	2b	2c	3a	3b	3c	4*
2007	32%	38%	25%	25%	14%	21%	24%	24%	32%	24%	32%
2008	13%	21%	4%	4%	8%	16%	19%	11%	20%	12%	13%
2009	13%	20%	3%	3%	5%	13%	16%	9%	18%	10%	12%
2010	19%	26%	10%	10%	5%	13%	16%	12%	21%	13%	18%
2011	23%	30%	15%	15%	2%	11%	14%	14%	23%	15%	23%

Source: IPHC projections using NEI harvest projections from ADF&G data.

\*The Preferred Alternative is not assumed to be zero in Area 3A, because the harvest regulations are not adjusted prior to the season, because demand is less than the allocation under Option 4, Trigger 4. To increase demand, charter angler’s bag limits would need to be expanded beyond the two fish limit. The Preferred Alternative does not grant the authority to increase the bag limit beyond two fish (the unguided angler daily bag limit). Therefore, some of the combined catch limit is projected to go unharvested.

Table 40 shows that the charter sector is not projected to harvest its entire allocation. The difference between its allocation and harvest is the amount of halibut that could go unharvested. Based on the projections provided, over 1 Mlb of the Area 3A combined catch limit would go unharvested in 2011. Those fish will remain in the water and any effect they have on increasing the biomass will result in a larger combined catch limit the following year. Any increase in available halibut will benefit both the commercial setline sector and the charter sector, when their harvests are expected to exceed their allocations. However, increases in halibut biomass may make it more difficult for groundfish harvesters to avoid halibut PSC, resulting in a higher probability of PSC-driven closures.

The allocation options being considered for Areas 2C and 3A, while based on the same formulas, could have very different impacts, as a result of the size of the current CEY relative to historical CEYs. Because of the different impacts on the two areas, the Council selected a different percentage of the combined catch limit in each area. The analysis in this document was designed to give the Council that latitude.

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.

1. Charter sector harvests are estimated for the years 2007 through 2011. An ARIMA model was run in STATA using ADF&G estimates of harvest from the years 1996 through 2006. Standard Errors were provided by ADF&G to allow the analysis to estimate 95 percent confidence intervals for the mean of the harvest. Note that these data are not the same as estimating the 95 percent confidence interval of the harvest itself.
2. Harvest estimates for the years 2007 through 2011 were based on the management measures anticipated to be in place those years. The Area 2C management measures for 2007 through 2011 include a ban on skipper and crew harvests; a line limit of six per vessel or the number of clients on board, whichever is lower; a two-fish bag limit; and a requirement that one of the two fish be less than 32 inches. In Area 3A, a two-fish bag limit and a ban on skipper and crew harvest are expected to be in place every year from 2007 through 2011.
3. An estimate of 2008 through 2011 combined charter and commercial catch limits was provided by IPHC staff. Those catch limits incorporated the SUFD model applied to estimated fishery CEYs. The 2007 combined charter and commercial catch limit was calculated by adding the charter GHL to the commercial catch limit. Therefore, the 2007 combined charter and commercial catch limit does not incorporate the coast-wide model, while the 2008 through 2011 estimates do.
4. The estimated combined commercial and charter catch limit is then multiplied by the percentage allocation in Options 1a through 1c and Options 3a through 3c to estimate the pounds that would be allocated under each option.
5. The commercial allocation is calculated by subtracting the projected charter allocation from the combined catch limit.
6. The projections assume the charter sector harvest of the combined catch limit is fully attained. That means the catch limit is neither exceeded, nor are fish left in the water. Any deviation from that assumption would affect the CEY for the following year, which would impact subsequent catch limits.
7. The harvest under the Preferred Alternative is assumed to be adjusted to equal the allocation, by changing the charter angler harvest regulations prior to the start of the fishing season. It is not expected that the actual difference will be zero each year, but it is not possible to determine difference, *a priori*. Any difference from zero is a result of inherent management imprecision in projecting the effect that bag limit and size limit changes will have on the upcoming season's charter harvest.

### Changes in Average Size of Charter Halibut

Because the IPHC accounts for halibut in net pounds and charter clients harvest numbers of fish, a conversion factor is needed to convert pounds of halibut into numbers of halibut. The conversion factor is important, because it varies from year-to-year and affects when the charter sector is assumed to reach its allocation. To help explain the issue, consider the charter mean net weight in Areas 2C and 3A from 1995 through 2006. Those estimates are provided by ADF&G and are shown in Table 41. If the mean weights are biased, the estimates of charter harvest may be too low or too high.

**Table 41 Charter mean net weight<sup>55</sup> (lb), Areas 2C and 3A, 1995–2006.**

Year	Area 2C	Area 3A
1995	19.9	20.6
1996	22.1	19.7
1997	20.2	22.3
1998	29.1	20.8
1999	17.8	19.2
2000	19.8	19.7
2001	18.1	19.2
2002	19.7	18.2
2003	19.1	20.7
2004	20.7	18.6
2005	19.1	17.8
2006	19.9	17.9
2007	17.7	16.9
2008*	19.5	17.1

Source: ADF&G

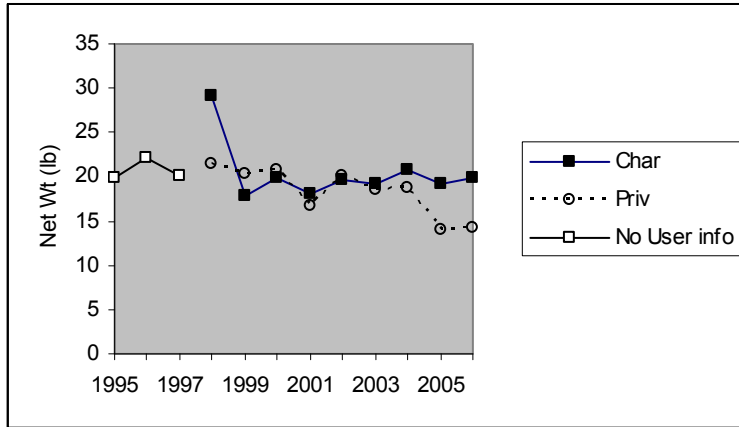
\* 2008 estimates are preliminary

Estimates of average weight, collected in Area 2C during 1995 through 1997, were not charter-specific, because the user group (charter/private) was not recorded when fish were measured. Estimates of mean weights for these years are for a mixture of private-caught and charter-caught fish. Figure 15 compares the Area 2C mixed charter and private mean weights for 1995 through 1997, with the charter-specific and private-specific mean weights for 1998 through 2006. The charter mean weight in 1998 is much higher than all subsequent years. Charter mean weight was relatively stable after that and not substantially different from the private mean weight from 1999 through 2004. It is possible that the 1998 charter mean weight estimate was biased high, because it does not fit the trend, and there would have to have been a large discrepancy between the charter and private mean weights for the mixed average to be so similar to the trend.

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<sup>55</sup> Charter weights provided are for headed and dressed halibut. Commercial weights are also for headed and dressed halibut with a deduction for “slime and ice,” made by the processor at delivery.

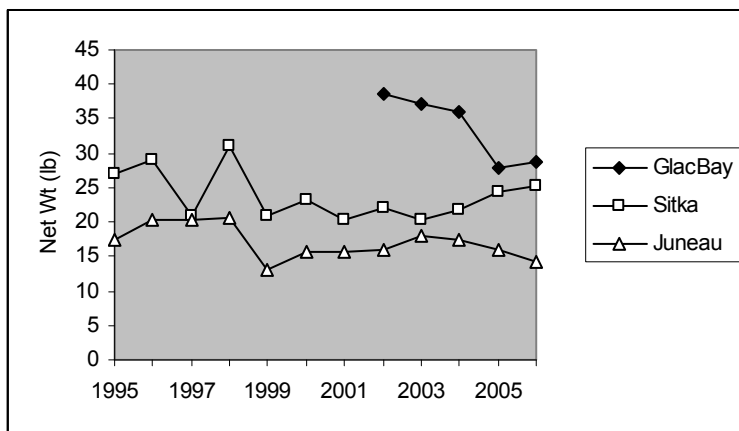




**Figure 15** Average net weight of halibut harvested by user group, 1995–2006.

Also, sampling was not conducted at all ports representing each of the various subareas within Area 2C or 3A each year. In order to estimate the total weight of the charter harvest, the estimates of the number of fish harvested in each subarea are multiplied by the mean weights representing harvest in each subarea. If there is no sampling and no mean weight estimate for a subarea, the mean weight from another area is typically substituted. No sampling was conducted in the Glacier Bay subarea, until 2002 (Figure 16). The mean weight from Juneau was substituted for the years 1995 through 1999, and the mean weight from Sitka was substituted for the years 2000 through 2001. The chart below suggests that the mean weight in the Glacier Bay area was substantially higher than the substituted weights from Juneau or Sitka. Therefore, substituting mean weights from one area for another area could bias the estimates.

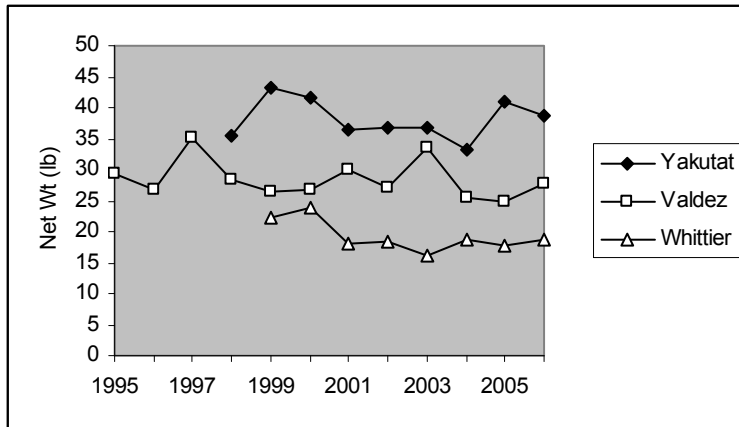
In addition, for Area 2C, no sampling has been conducted in the Haines/Skagway area, due to the small magnitude of harvest. Mean weights from Juneau have been substituted all years. It is unknown whether this substitution is reasonable, but errors would have had little effect on the total estimates of removals, because the harvest at Haines/Skagway typically represents only about 1 percent of number of fish harvested in Area 2C.



**Figure 16** Mean halibut weights for halibut harvested from charter vessels in the area around Juneau, Glacier Bay, and Sitka, 1995–2006.

In Area 3A, no significant sampling of halibut harvested from charter vessels was conducted at Whittier before 1999 or at Yakutat before 1998. Harvest estimates for Prince William Sound were not broken out before 1999, so the Valdez mean weight was applied to all halibut harvested in Prince William Sound. In addition, Valdez mean weight data were applied to harvest in the Yakutat area. Figure 17 shows that

mean weight has been substantially higher at Yakutat than at Valdez every year since sampling began, and that mean weight at Valdez is higher than at Whittier. Since the mean weight at Whittier shows a slight downward trend since 1999, it is possible that mean weights were similar before that time. The effect of underestimating mean weight at Yakutat on the Area 3A GHL would have been minor, because the harvest at Yakutat represents a small proportion of the total Area 3A harvest.



**Figure 17 Mean net halibut weights for halibut harvested from charter vessels in the areas around Yakutat, Valdez, and Whittier, 1995–2006.**

Assuming the charter sector is allocated 1.43 Milb in Area 2C<sup>56</sup> and 3.65 Milb in 3A, we can compare the number of halibut that could be harvested and still remain under the allocation. These allocations are only used for illustrative purposes and are not intended to imply that the Council is considering this option above any others. Based on the calculations presented in Table 42, a 1.43 Milb allocation in Area 2C would result in the charter sector being able to harvest between 69,082 and 80,337 halibut. The difference of about 11,000 halibut is due solely to the change in average halibut weight. Therefore, during years when average size of a halibut applied to the allocation is relatively large, the number of fish that could be harvested before exceeding its allocation would be reduced. Assuming a constant catch per client, fewer clients could take a trip before the allocation is taken, or before more restrictive management measures need to be implemented. When the average fish size used for the conversion is smaller, the charter sector may harvest more fish, before it reaches its allocation. This also suggests it is less likely to require additional management measures.

**Table 42 Number of halibut the charter sector could harvest and remain under the assumed allocation based on average halibut weights that year.**

Year	2C	3A
1999	80,337	190,104
2000	72,222	185,279
2001	79,006	190,104
2002	72,589	200,549
2003	74,869	176,329
2004	69,082	196,237
2005	74,869	205,056
2006	71,859	203,911

Source: ADF&G halibut net weight estimate for 1999–2006 and an assumed allocation of 1.43 Milb in Area 2C and 3.65 Milb in Area 3A.

<sup>56</sup> The Area 2C GHL was 932,000 lb and 788,000 lb in 2008 and 2009, respectively; however, because the data used in this table were through 2006, the analyst used the GHL that was in place those years.

## Economic Effects

As noted in the October 2007 Scientific and Statistical Committee (SSC) report, this analysis does not provide quantitative estimates or confidence intervals for the magnitude of net national benefits. Nor are quantitative estimates provided for regional economic impacts of the alternatives considered in this amendment. Because those estimates cannot be provided, given the information available, the analysis does not identify an optimal allocation. To provide these data, analysts would need information on the contribution to national welfare associated with all sources of commercial removals (e.g., long-line retained catch and wastage, charter catches and release mortality, halibut prohibited species catch (PSC) limit losses in other fisheries, etc.), as well as the effects these may have on users and uses of the resource not associated with commercial fishing activity, both market and non-market. That information is currently unavailable and an analysis to estimate those impacts is outside the scope of this document. Additional information on some of these economic impacts is provided in Appendix A and Appendix B.

Determining which allocation would maximize net national benefits, narrowly focused on the two primary sectors of concern here would, by definition, require detailed information on costs and expenditures in both the commercial and charter sectors. In addition to cost information, demand for charter trips and angler willingness-to-pay for trips would also be required. Collecting that information could be expensive and time consuming. Even if these data were available, changes in the halibut biomass would impact the optimal sustainable yield and the optimal allocation of halibut. Because of these ongoing changes to the resource, any allocation that is optimal when it is constructed may be less than optimal in the future. To maintain an optimal allocation, managers would need to adjust that allocation whenever economic or biological conditions change (Criddle 2006a). It is unreasonable to assume that optimal net economic benefits could be sustained over time by a management agency altering the allocation.

### Charter Sector Revenue

There is not a unique, centralized data 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 were priced at between \$150 and \$250. Some trips were priced higher, if the client wanted to book a vessel with four or fewer clients for private trips or 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 dates discounted trips were offered varied by company. Rates quoted for Seward were similar to those for Homer.

The GHM amendment analysis provided some basic information on the market price of a charter trip in Area 2C. Those data indicated that 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 from Area 3A ports, because 2C trips are affected by cruise ship timelines (four-hour trips or six-hour trips), are combined with other activities<sup>57</sup> (e.g., salmon fishing), or are 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.

Providing rigorous estimates of the charter sector's revenue is not possible with the data available. Area-wide data sets are not available for either gross revenues or costs of operating the charter business. Both of these pieces of information are needed to estimate net revenues. The cost and time required to collect these data exceed those available for this analysis.

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<sup>57</sup> Combination trips for salmon are also common in many ports in Area 3A.

The Council requested at its April 2008 meeting that staff provide a rough estimate of the gross revenue generated from the charter fees that operators charge their clients, understanding that a rigorous estimate could not be generated. To provide the requested information, several assumptions had to be made. The first assumption is the price that clients are paying for a charter trip. As noted, 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 here. Earlier discussions in this document have pointed out that several different types of charter trips are offered. Each of those trips have different attributes and command a different price. The prices in Area 2C appear to be slightly higher than Area 3A trips. Half day trips are less expensive than full-day trips. Area 2C is assumed to have a higher full-day trip price, but is assumed to offer a higher percentage of half-day trips, as a result of the influence of cruise ship passengers. Because Area 2C is assumed to provide more half-day trips and the rate is lower than a full-day trip we have assumed that the average price of a trip is \$225 in both areas.

The average harvest per client was estimated using 2002 through 2006 ADF&G data on the number of clients and the total charter harvest by area. Those calculations resulted in an estimated average harvest per client of 24 lb in Area 2C and 30 lb in Area 3A. Annual variation in the size of halibut retained and the number of halibut harvested per angler could result in future averages being different from these projections. Adoption of the 32 inch maximum size limit for one of the two halibut that may be retained in Area 2C during, at least portions of 2007, 2008, and 2009 could also affect future average harvest per client. The likely result would be a decrease the average size of retained halibut. If the average size of halibut harvested in Area 2C declines, charter anglers would be able to take more trips while harvesting the same number of pounds of halibut. Because of the assumptions built into the gross revenue estimate, it would also result in the charter sector being able to generate more revenue in our simplistic model.

Table 43 shows estimated charter revenues derived from fishing in Area 2C. The assumptions that went into determining the estimates are shown below the table. The estimated Area 2C charter revenue ranges from \$7.4 million to \$17.8 million over the 2007 through 2011 time period, depending on the option selected. Option 2(c) is projected to generate the most revenue. Option 1(c) is the most restrictive allocation, so it results in the smallest gross revenue. All of the other allocations fall within that range, and the fixed pound and mixed allocations would generally result in revenues exceeding \$10 million. After 2009, almost all of the percentage based allocations would result in the charter sector earning more than \$10 million in gross revenue, annually, over the time period considered, *ceteris paribus*.

**Table 43** Estimates of potential Area 2C charter income (in million dollars) for the years 2007–2011 based on the various allocations.

Year	Percentage Based Allocations				Fixed Pound Allocation			Mixed Allocation			Pref Alt
	1a	1b	1c	1d	2a	2b	2c	3a	3b	3c	
2007	12.54	16.56	11.20	14.45	13.41	15.84	17.81	12.97	15.53	14.51	14.45
2008	9.72	12.83	8.68	11.20	13.41	15.84	17.81	11.56	13.82	13.24	11.20
2009	8.36	11.04	7.47	9.64	13.41	15.84	17.81	10.88	13.00	12.64	9.64
2010	8.30	10.96	7.41	9.57	13.41	15.84	17.81	10.85	12.96	12.61	9.57
2011	8.67	11.45	7.74	9.99	13.41	15.84	17.81	11.04	13.18	12.78	9.99

Assumptions: The average client would harvest 24 lb of halibut per trip in 2C (the average harvest from 2002 through 2006 using ADF&G data). The average charter trip cost \$225. Charter clients took just enough trips to harvest their entire projected allocation. Revenues generated from lodging, food, and services that are charged in addition to the basic charter fee are not considered in this estimate, nor are consumer surpluses generated from the trip. All these should be considered when addressing net benefits to the Nation and are discussed in this section of the RIR.

In Area 3A the overall revenues are larger than Area 2C, but the revenue per pound of halibut is less because each angler is assumed to harvest more pounds of halibut in 3A and they are assumed to pay the same price for a trip.

Estimated annual gross revenue from halibut charter fees ranged from \$26.3 million to \$38.1 million (Table 44).<sup>58</sup> Because the calculations are linear projections, the smallest allocations result in the smallest revenue. Allocation 1c yields the smallest projected gross revenue in most years. Option 1b yields the largest projected gross revenue in every year. The percentage based allocations varied by about \$3 million to \$6 million, depending on the year selected.

**Table 44** Estimates of potential Area 3A charter income (in million dollars) for the years 2007–2011 based on the various allocations.

Year	Percentage Based Allocations				Fixed Pound Allocation			Mixed Allocation			Pref Alt
	1a	1b	1c	1d	2a	2b	2c	3a	3b	3c	4
2007	34.90	38.12	31.43	31.43	27.38	30.08	31.13	31.14	34.71	31.28	34.65
2008	29.21	31.91	26.31	26.31	27.38	30.08	31.13	28.29	31.51	28.72	29.01
2009	29.96	32.72	26.98	26.98	27.38	30.08	31.13	28.67	31.93	29.05	29.74
2010	32.03	34.98	28.85	28.85	27.38	30.08	31.13	29.70	33.10	29.99	31.80
2011	34.89	38.11	31.43	31.43	27.38	30.08	31.13	31.13	34.71	31.28	34.65

Assumptions: The average client would harvest 30 lb of halibut per trip in Area 3A (the average harvest from 2002 through 2006 using ADF&G data). The average charter trip cost \$225. Charter clients took just enough trips to harvest their entire projected allocation. Revenues generated from lodging, food, tips, and services that are charged in addition to the basic charter fee are not considered in this estimate, nor are consumer surpluses generated from the trip. All these should be considered when addressing net benefits to the Nation and are discussed in this section.

Finally, it is inappropriate to compare projected charter gross revenues with projected 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 (or, in some cases, a portion thereof) generated by the sectors. Net revenues would be a more appropriate comparison for the two sectors, but cost data are not available to generate those estimates.
- 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 the producer surplus generated by the charter operators and commercial harvesters.
- Policy makers may have social or policy reasons to implement an option that does not generate the greatest economic benefits.

Defining the amount of halibut the charter sector may harvest in Areas 2C and 3A before future management measures are implemented has the potential to change how the charter fishery operates. Note that management Options 1 through 3 do not limit the amount of halibut the charter sector may harvest during a given season. Instead, under those options, when the charter sector exceeds its allocation by a sufficient (pre-specified) amount in the current year, additional management measures would be imposed in subsequent years to limit future harvests and assure that the charter harvest does not exceed its common pool allocation again. The preferred alternative proposes to implement the management measure(s) deemed appropriate to constrain the charter harvest to its allocation. The Council has declared its intension to err on the side of more restrictive measures to constrain charter catch to its allocations.

<sup>58</sup>Gentner et al. (2008) reported that all marine charter fees in Alaska for 2006 totaled \$65.5 million.

## Commercial Harvesters

Under the status quo, the Area 2C commercial and charter sectors are being impacted more severely in the near-term, than the Area 3A fleets, primarily as a result of the declining CEY. Changes in stock abundance and the implementation of the coast-wide assessment model are the primary reasons for the substantial allocation decrease in Area 2C.

**Projections** The projections of halibut CEY used in this analysis were prepared for the Council in 2008. Actual CEYs from 2008 through 2011 in both Area 2C and Area 3A were lower than the projections prepared for this analysis. As a result, the commercial allocations calculated from projected CEYs in the following analysis are likely higher than the charter halibut allocations that would result from updated projections. However, the description of the effects of the options on commercial harvests and harvesters provided in this analysis would also be accurate for lower sector allocations.

Table 45 shows the projected Area 2C commercial allocation under status quo management measures and projected combined catch limits using the IPHC SUFastD policy to CEY changes. As described earlier, the IPHC elected in 2011 to apply the SUFullID policy to CEY, resulting in a lower fishery CEY than presented in this analysis. The 2007 allocation projection (under an area wide assessment) shows that the commercial sector would be allocated between 8.67 Mlb and 9.33 Mlb, depending on the charter allocation selected. Recall that from 2004 through 2006, the Area 2C commercial allocation was between 10.50 Mlb and 10.93 Mlb. So, for 2007, the projected decline was about 1.5 Mlb. Starting in 2008, the coast-wide assessment was used for the CEY projections. The use of the new model, changes in stock abundance, and the revised charter allocation, results in the commercial sector being projected to receive an allocation of from 5.77 Mlb to 6.78 Mlb. This represents a decrease in its allocation from just over one-half, to fully two-thirds of its 2004 through 2006 allocation levels. By 2011, the commercial allocation is projected to be between 4.97 Mlb and 6.07 Mlb. These allocation amounts are approximately one-half to three-fourths of the size of allocations given to the commercial sector, since the beginning of the halibut IFQ program. These allocations likely would be lower under updated CEY projections.

Because the harvests from other regulatory areas in Alaska are not as dramatically affected by reduced allocations, the quantity of halibut on the market is not expected to be reduced to a level that would substantially increase Area 2C ex-vessel prices. The large decrease in quantity of halibut sold by Area 2C fishermen, and the modest expected change in ex-vessel prices, would be expected to decrease the net revenue of commercial harvesters, all else equal. Some QS holders may be unable to remain in the fishery as a result of declines in net revenue. Operations that are unable to cover the costs of operation and the costs of capital (for QS and/or vessels and equipment) may be forced to leave the fishery. Ex-vessel prices, number of vessels reporting landings, and total catch are reported in Table 45 for Areas 2C and 3A. Statewide ex-vessel prices are also included in the table.

**Table 45 Vessels, catch, and ex-vessel prices from the Area 2C and 3A halibut fishery, 1995–2007.**

Year	Area 2C			Area 3A			Statewide
	Vessels	Total Catch	Ex-vessel Price	Vessels	Total Catch	Ex-vessel Price	Ex-vessel Price
1995	3,077	7.79	\$2.04	2,971	17.98	\$1.99	\$1.97
1996	3,326	8.53	\$2.26	2,952	19.37	\$2.24	\$2.19
1997	3,617	9.64	\$2.24	3,274	24.28	\$2.16	\$2.13
1998	3,118	9.66	\$1.39	2,919	24.61	\$1.36	\$1.29
1999	3,451	9.90	\$1.99	3,074	24.31	\$2.09	\$2.00
2000	3,037	8.20	\$2.62	2,571	18.07	\$2.60	\$2.52
2001	2,738	8.17	\$2.11	2,582	21.07	\$2.03	\$1.99
2002	2,758	8.43	\$2.95	2,546	22.56	\$2.89	\$2.84
2003	2,755	8.24	\$2.95	2,551	22.28	\$2.89	\$2.84
2004	2,792	10.09	\$3.04	2,594	24.60	\$3.04	\$2.97
2005	2,956	10.50	\$3.08	2,650	25.05	\$3.07	\$3.00
2006	3,129	10.34	\$3.75	2,687	24.95	\$3.78	\$3.75
2007 <sup>a</sup>	2,675	8.30	\$4.41	2,725	25.96	\$4.40	\$4.43
2008 <sup>b</sup>	2,130	6.11	~ \$4.38	2,517	24.02	~ \$4.38	n/a

Source: NMFS IFQ allocation and landings reports 1995–2008.

<sup>a</sup> 2007 ex-vessel price estimates were derived from <http://alaskafisheries.noaa.gov/ram/ifqreports.htm#special>.

<sup>b</sup> 2008 ex-vessel price estimates were derived from 73 FR 73908 (December 4, 2008).

Because QS is expected to generate lower net revenues<sup>59</sup> over the next six years (based on IPHC CEY projections), the asset value of Area 2C QS is also expected to decline. Persons that are forced to sell their QS (and those that willingly sell their QS) would be expected to receive less for their QS. Persons that are unable to weather the financial downturn, could be bought out by persons that are in a better financial position, that feel stock abundance will increase over the long-term, and that constraints on charter harvests will help preserve their portion of the combined catch limit. As a result, Area 2C QS holdings would be further concentrated. Alternatively, they could choose to lease their IFQs to charter LEP holders at more favorable economic terms rather than fishing them.

Information on historical IFQ and QS transfers are reported in Table 46. The data trend shows that IFQ prices have generally increased from 2000 through 2008 and showed a slight decline in 2009 in both Area 2C and Area 3A. Mean QS prices increased in Area 2C from 2000 through 2006 and began to decline in 2007. In Area 3A, mean QS prices increased from 2000 through 2008 and showed a slight decline in 2009.

<sup>59</sup> This assumes demand for Alaska commercial halibut does not change.

**Table 46 IFQ and QS transfer data for Areas 2C and 3A, 1995–2006.**

<b>Area</b>	<b>Year</b>	<b>Mean Price \$/IFQ</b>	<b>Total IFQ Transferred used for pricing</b>	<b>Mean Price \$/QS</b>	<b>Total QS Transferred Used for Pricing</b>	<b>Number of Sales Used for Pricing</b>
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
	2007	19.62	183,297	2.80	1,282,693	76
2008	25.90	206,440	2.70	1,979,395	96	
2009	20.14	75,636	1.70	897,261	30	
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
	2007	20.53	814,949	2.91	5,750,520	169
2008	26.83	498,864	3.51	3,808,709	126	
2009	25.52	183,766	3.00	1,565,934	71	

Source: NMFS RAM

Table 47 presents the projected Area 2C commercial allocations (Mlb) from 2007 through 2011 under each of the charter allocation options considered in this analysis, including Alternative 3, the preferred alternative. The Area 2C commercial allocation is projected to always be less during the years considered in this amendment under the fixed poundage allocations, relative to the percentage based allocations. This



assumption is based on the combined catch limit being lower in those years relative to what it would have been in the base years used to determine the allocations. As discussed earlier, updated projections likely would result in lower commercial allocations because CEYs have been lower than those projected in 2008.

**Table 47** Projected Area 2C commercial allocations (Mlb) under each of the charter allocation options, 2007–2011.

Year	Percentage Based Allocations				Fixed Pound Allocation			Mixed Allocation			Pref. Alt.
	1a	1b	1c	1d	2a	2b	2c	3a	3b	3c	4
2007	8.87	8.44	9.02	8.67	8.78	8.52	8.31	8.83	8.55	8.66	8.67
2008	6.87	6.54	6.99	6.72	6.48	6.22	6.01	6.68	6.44	6.50	6.72
2009	5.92	5.63	6.01	5.78	5.38	5.12	4.91	5.65	5.42	5.46	5.78
2010	5.87	5.59	5.97	5.74	5.33	5.07	4.86	5.60	5.38	5.41	5.74
2011	6.13	5.84	6.23	5.99	5.63	5.37	5.16	5.88	5.65	5.70	5.99

Note: Assumes an Area 2C combined commercial and charter catch limit of 10.21 Mlb in 2007, 7.91 Mlb in 2008, 6.81 Mlb in 2009, 6.76 Mlb in 2010, and 7.06 Mlb in 2011.

Table 48 shows the percentage of the combined commercial and charter catch limit that is projected to be allocated to the commercial sector under the options considered for this analysis using the projections prepared in 2008. Obviously, the fixed percentage allocation is the same each year. However, when the fixed pound allocation is used, the percentages vary dramatically. In 2007, when the combined catch limit is assumed to be 10.21 Mlb, the charter sector’s percentage of that total ranges between 14.0 percent and 18.6 percent. When the combined catch limit decreases to 7.91 Mlb. in 2008, the percentage of the total allocated to the charter sector increases to 18.1 percent to 24.0 percent of the total. As the combined catch limit declines, the percentage of the total, allocated to the charter sector, declines. By 2010, the charter sector’s percentage of the 6.76 Mlb combined catch limit total is reduced to between 21.2 percent and 28.1 percent of the total. Those percentages are considerably higher than the fixed percentage options being considered (and the commercial allocation is lower). Options that are based on 50 percent fixed pounds and 50 percent fixed percentages, yield results between those strictly based on pounds or percentages. Those options provide a floor that the charter sector cannot fall below. As the combined catch limit approaches that limit, the percentage approaches those under the fixed pound allocations. When the combined catch limit increases, the percentages approach the percentage based allocation options.

**Table 48 Percentage of Area 2C combined commercial and charter catch limit allocated to the charter sector.**

Year	Percentage Based Allocations				Fixed Pound Allocation			Mixed Allocation			Pref. Alt.
	1a	1b	1c	1d	2a	2b	2c	3a	3b	3c	4
2007	13.1%	17.3%	11.7%	15.1%	14.0%	16.6%	18.6%	13.6%	16.2%	15.2%	15.1%
2008	13.1%	17.3%	11.7%	15.1%	18.1%	21.4%	24.0%	15.6%	18.6%	17.9%	15.1%
2009	13.1%	17.3%	11.7%	15.1%	21.0%	24.8%	27.9%	17.1%	20.4%	19.8%	15.1%
2010	13.1%	17.3%	11.7%	15.1%	21.2%	25.0%	28.1%	17.1%	20.5%	19.9%	15.1%
2011	13.1%	17.3%	11.7%	15.1%	20.3%	23.9%	26.9%	16.7%	19.9%	19.3%	15.1%

Note: Assumes an Area 2C combined commercial and charter catch limit of 10.21 Mlb in 2007, 7.91 Mlb in 2008, 6.81 Mlb in 2009, 6.76 Mlb in 2010, and 7.06 Mlb in 2011.

In Area 3A, the projected allocations generally exceed levels that have occurred since 1995. The projected 2008 commercial allocations ranged between 27.15 Mlb and 28.44 Mlb, depending on the charter allocation selected. Allocations at that level are at the high end of commercial allocations issued under the IFQ program. The commercial allocations during the years 2009 through 2011 are projected to increase above those amounts. By 2011, the commercial allocations could exceed 30 Mlb, under the more restrictive charter allocations, *ceteris paribus*.

Because the commercial allocations are projected to be at or above historical levels in the near future, the QS values are not expected to decline as a result of the charter allocations being considered. If the trend of higher than historical commercial allocations occurs, the Area 3A QS values may increase.

Table 49 shows how the percentage based options benefit the charter sector when the combined commercial and charter catch limit decreases, and benefit the commercial sector when it increases. In 2007, the commercial sector was projected to be allocated 27.92 Mlb, under the assumptions used to create the percentage based allocation, Option 1b. Option 2c, the fixed pound charter allocation that year, is projected to allocate the commercial sector 28.85 Mlb. So, the commercial sector would be allocated about 0.9 Mlb more under the fixed pounds allocation. In 2008, the combined catch limit is projected to decrease<sup>60</sup> to 27.62 Mlb. Because of the decrease in available halibut, the commercial sector would be allocated 23.37 Mlb, under Option 1b, and 23.47 Mlb, under Option 2c. Since the fixed poundage charter allocation does not increase the allocation to the charter sector, the commercial sector would be allocated about 1.1 Mlb more, under Option 2c, compared to Option 1b. The combined catch limit is projected to increase from 2009 through 2011. By 2011, the commercial allocation under Option 1b is projected to be 27.92 Mlb. That year, the commercial allocation is projected to be 28.85 Mlb, under Option 2c. The increased catch limit results in the commercial allocation being about 1.0 Mlb more, under the charter sector's fixed poundage allocation. Also the mixed allocation that uses 50 percent of a fixed pound allocation and 50 percent of a percentage allocation, tends to moderate the swings between the other options that are completely based on pounds or percentages. Those options would always fall between the other two types of allocation, whenever the same years are used in the calculation.

<sup>60</sup> It is expected that the decrease is primarily due to changing from the area-wide to coast-wide calculation of the combined catch limit.

**Table 49** Projected Area 3A commercial allocations (Mlb) under each of the charter allocation options 2007–2011.

Year	Percentage Based Allocations				Fixed Pound Allocation			Mixed Allocation			Pref. Alt.
	1a	1b	1c	1d	2a	2b	2c	3a	3b	3c	4
2007	28.35	27.92	28.81	28.81	29.35	28.99	28.85	28.85	28.37	28.83	28.38
2008	23.73	23.37	24.12	24.12	23.97	23.61	23.47	23.85	23.42	23.79	23.76
2009	24.33	23.97	24.73	24.73	24.68	24.32	24.18	24.51	24.07	24.45	24.36
2010	26.02	25.62	26.44	26.44	26.64	26.28	26.14	26.33	25.88	26.29	26.05
2011	28.34	27.92	28.81	28.81	29.35	28.99	28.85	28.85	28.37	28.83	28.38

Note: Assumes an Area 3A combined commercial and charter catch limit of 33.00 Mlb in 2007, 27.62 Mlb in 2008, 28.33 Mlb in 2009, 30.29 Mlb in 2010, and 33.00 Mlb in 2011.

Table 50 shows the percentage of the projected combined commercial and charter catch limit that would be allocated to the charter sector, under each option being considered. Because Area 3A CEYs for 2007 through 2011 are closer to their historical averages than in Area 2C, the percentages under the fixed pound and fixed percentage allocations are more alike. Recall that in Area 2C the projected percentages under the fixed pound allocations were as high as 28 percent in 2010. In Area 3A, the percentage allocated to the charter sector never exceeds 14 percent, between 2007 and 2011, when the charter sector is allocated a fixed number of pounds.

**Table 50** Percentage of Area 3A combined commercial and charter catch limit allocated to the charter sector.

Year	Percentage Based Allocations				Fixed Pound Allocation			Mixed Allocation			Pref. Alt.
	1a	1b	1c	1d	2a	2b	2c	3a	3b	3c	4
2007	14.1%	15.4%	12.7%	12.7%	11.1%	12.2%	12.6%	12.6%	14.0%	12.6%	14.0%
2008	14.1%	15.4%	12.7%	12.7%	13.2%	14.5%	15.0%	13.7%	15.2%	13.9%	14.0%
2009	14.1%	15.4%	12.7%	12.7%	12.9%	14.2%	14.6%	13.5%	15.0%	13.7%	14.0%
2010	14.1%	15.4%	12.7%	12.7%	12.1%	13.2%	13.7%	13.1%	14.6%	13.2%	14.0%
2011	14.1%	15.4%	12.7%	12.7%	11.1%	12.2%	12.6%	12.6%	14.0%	12.6%	14.0%

Note: Assumes an Area 3A combined commercial and charter catch limit of 33.00 Mlb in 2007, 27.62 Mlb in 2008, 28.33 Mlb in 2009, 30.29 Mlb in 2010, and 33.00 Mlb in 2011.

RAM data indicate that a total of 1,500 persons held QS in Area 3A at the end of 2009. The percentage reduction in IFQ pounds resulting from changes in the commercial setline fishery catch limit is the same for all QS holders in an area. For example, RAM data indicate that the pounds of IFQ allocated to the setline fishery in 2009 were 21.70 Mlb. A 670,000 lb reduction would result in each person being allocated 3.1 percent 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 does not affect the pounds issued.<sup>61</sup> Persons who were issued 200,000 lb in 2009 would only be issued 193,800 lb of IFQ.

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 commercial sector would also be impacted if the charter sector was able to successfully lobby the Council to increase an allocation that becomes binding, and vice-versa.

<sup>61</sup> The example shows that 7 lb allocation multiplied by 0.969 (1 minus 0.031) is equal to 6.78 lb. Rounding 6.78 lb to the nearest pound yields a 7 lb allocation.

Some halibut IFQ holders also participate in other commercial fisheries. The revenues generated and the costs incurred in those fisheries would impact the overall profitability of the firm that holds halibut IFQ. Data that are currently available do not readily allow the analysts to determine the extent of an IFQ holder's participation in other fisheries. Vessel ownership cannot be linked with IFQ holders, given available data. Therefore, the harvest history of vessels, rather than persons, was used as a proxy to compare activity in other fisheries. The harvest history of vessels used to land halibut in Areas 2C or 3A was derived from ADF&G fish tickets. Those data 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 or 3A halibut, during the years 1995 through 2006, is presented in Table 51. Available information was limited to 1995 through 2006 for this analysis. However, the value of halibut harvested has generally increased over time and remained high through 2011. Groundfish ex-vessel values show some variation, with the smallest values harvested between 1998 and 2002. Every other year, over \$80 million in groundfish was harvested by vessels from this halibut fleet. 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, halibut revenues accounted for only 26 percent of the vessel's revenue in 1995. This increased to 52 percent by 2004. Data were not available for 2005 or 2006.

**Table 51 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
<b>Percent of Total</b>							
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

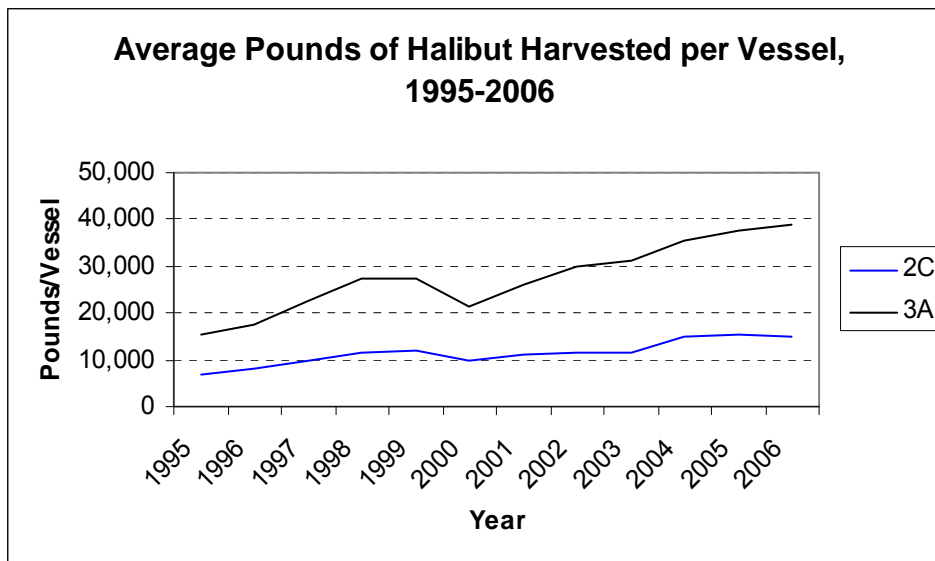
Source: CFEC Fishticket data provided by NPFMC staff

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 51 also shows the total number of vessels used to harvest halibut. The number of vessels has decreased over time. The number of vessels increased over the previous year only in 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 percent decline. During that same period, the Area 2C commercial halibut

harvest increased from 7.77 Mlb to 10.47 Mlb (34.7 percent). The Area 3A halibut harvests increased from 18.34 Mlb to 25.38 Mlb (38.4 percent). So, the number of vessels used to harvest the fish declined even with an increase in harvest.

Figure 18 shows the increase in average halibut harvest<sup>62</sup> per vessel in both areas. The trend lines indicate harvest per vessel increased in both areas through 2006, except for 2001. Halibut harvest per vessel has declined in the years since 2006. Area 3A shows the largest increase, increasing from about 15,000 lb per vessel in 1995, to about 40,000 lb in 2006. Area 2C vessels averaged about 7,000 lb in 1995 and increased to about 15,000 lb in 2006. This trend indicates that IFQ fishermen may be reducing 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 18** The average pounds of halibut harvested per vessel in the Area 2C and 3A IFQ fishery, 1995–2006.

Cost Recovery. NMFS published regulations in the *Federal Register* (65 FR 14919, March 20, 2000) implementing the IFQ Cost Recovery Program for IFQ landings of halibut and sablefish. The regulations implemented on March 15, 2000, may be found in 50 CFR 679.45. Under that cost recovery program IFQ permit holders incur a cost recovery fee liability for every pound of IFQ halibut and sablefish that is landed under his or her IFQ permit(s). The IFQ permit holder is responsible for paying the fee liability for all IFQ halibut and sablefish landings on his or her permit(s) to NMFS on or before the due date of January 31, following the year in which the IFQ landings were made. For each permit, the dollar amount of the fee due is determined by multiplying the annual IFQ fee percentage (3 percent or less) by the ex-vessel value of each IFQ landing. If the permit holder has more than one permit, the total amounts of each permit are summed to determine his or her total cost recovery fee.

Section 304(d)(2)(B) of the Magnuson-Stevens Act sets a maximum cost recovery fee of 3 percent of the ex-vessel value of fish harvested under an IFQ program. NMFS may reduce the fee percentage, if actual management and enforcement costs are a lesser percentage. NMFS will not know the actual annual costs of IFQ-related management and enforcement until after the end of each federal fiscal year (September

<sup>62</sup> Data were provided by the RAM division of NMFS.

30). Because the fee is not set until after much of the fishing year is complete, IFQ permit holders are encouraged to have access to sufficient funds to cover a 3 percent fee, if it is required

The cost recovery fee is paid by both halibut and sablefish IFQ permit holders. The structure of the cost recovery program does not facilitate applying different fee percentages to IFQ holders in different areas, nor does it allow halibut and sablefish IFQ permit holders to be charged different fee percentages. Any increase in the cost recovery fees as part of this program will be borne by halibut and sablefish IFQ permit holders, based on the ex-vessel value landings.

Part of the reason both halibut and sablefish IFQ permit holders pay the same rate is that it is not possible to divide costs of the program at a species or area level. NMFS calculates the overall enforcement and management cost of the program, but cannot differentiate costs by species or area. For example, NMFS does not track the time spent answering questions about the program from people holding Area 2C QS versus people holding Area 3B QS. Tracking costs at that level is not realistic.

The halibut and sablefish cost recovery fee for 2009 was set at 1.6 percent of ex-vessel landings and reportedly yielded \$3.4 million to cover management and enforcement costs. Both changes in the ex-vessel price of halibut/sablefish and the amount of halibut/sablefish harvested can affect the revenue generated from the cost recovery fee. IPHC projections of the future coast-wide exploitable biomass indicate it will increase over the next five-years (Hare and Clark 2008). Assuming that ex-vessel prices do not fall at a greater rate than harvests increase, cost recovery revenues should not decline over this period, if the same fee is applied.

Management and enforcement costs of this proposed catch sharing plan are currently unknown. However, NMFS has indicated, based on a feasibility study, the one-time implementation cost may be as much as \$400,000 and annual equipment costs and updates could be as much as \$100,000. Those costs do not account for any increased enforcement needs or additional RAM staff.

Based on 2009 fee percentages and assuming that those rates generated \$3.4 million, each percentage of the cost recovery fee yielded \$2.1 million. Assuming the harvest and prices of halibut and sablefish remain relatively stable, a \$500,000 increase in costs would increase the cost recovery fee to about 1.8 percent on halibut and sablefish harvests from IFQ permits. Adding in additional costs for personnel and enforcement would increase the fee.

As discussed throughout this amendment, halibut IFQ permit holders<sup>63</sup> in Areas 2C and 3A are expected to benefit from this program, because the charter sector harvests in those areas will be limited. They will also have the opportunity to lease halibut IFQ to the charter sector. While we cannot project how much IFQ will be leased by the charter sector, the ability to lease IFQ is expected to benefit IFQ holder in those areas, by allowing them to increase revenue through leases or perhaps higher ex-vessel prices, if fewer fish enter the commercial market.

The 413 QS holders that only fish halibut west of Area 3A and the 851 sablefish IFQ permit holders<sup>64</sup> will realize higher cost recovery fees, but will not benefit from leasing IFQ to the charter sector. Their cost recovery fee is expected to increase, and the sablefish IFQ permit holders will not recover those costs through higher ex-vessel prices associated with changes in sablefish sold as a result of this program. Halibut permit holders west of Area 3A may recoup some of the cost recovery fee through higher ex-vessel prices, but revenue changes that result from changes in the quantity of halibut sold is unlikely to completely offset the costs. Some QS holders own both halibut and sablefish QS. Based on current QS holdings reported by RAM (as of July 2008), 625 persons own halibut and sablefish QS. These persons will likely derive some benefits from the program. However, the 226 sablefish QS holders that do not

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<sup>63</sup> Based on RAM data for 2009 QS holders, it appears that 2,705 persons hold Area 2C or 3A halibut QS. Of those QS holders, approximately 200 hold QS in both Area 2C and 3A.

<sup>64</sup> Based on the current QS data provided by RAM at <http://www.alaskafisheries.noaa.gov/ram/ifqreports.htm#qspools>.

own any halibut QS are expected to pay an increased cost recovery fee and not benefit directly from the program. However, it is not possible to determine if the fee they pay before or after the plan is implemented truly reflects the costs they impose on NMFS for the management and enforcement of the sablefish portion of the IFQ program.

## **Element 2 – Annual Regulatory Cycle**

*The initial charter allocation would be a common harvest pool for all charter limited entry permit holders. It would not close the fishery when the charter allocation is exceeded. Instead, the allocation would be linked to an annual regulatory analysis of management measures (delayed feedback loop) that take into account the projected CEY for the following year and any overages by the charter industry in the past year(s). This system would work best if there is not a time lag between the overage year and the payback year. The Council will not revisit or readjust the sector split. An allocation overage would trigger the regulatory process automatically, in contrast with current GHL management. Any underages would accrue to the benefit of the halibut biomass and would not be reallocated or paid forward.*

No regulations would be required to implement Element 2. This element is a statement of the Council's intent regarding how Element 1 will be written into regulation.

For Option 1 through Option 3 under Element 1, the second component of the proposed alternative addresses a planned management response to an overage of the charter sector allocation. The Council has proposed continuation of the current regulatory amendment process, but one with a tighter linkage between an overage and subsequent action(s) to prevent further overages.

Under Element 2, the Council also states its intent that the charter sector allocation would be allocated to the universe of charter LEP holders in each area and would be set initially at the level decided under Element 1.<sup>65</sup> The Council stated its intent not to consider increasing the charter sector allocation, when and if the allocation is determined to be binding on the charter sector.<sup>66</sup> The Council stated its intent that any overage would not close the fishery in-season; instead, it stated its intent to act as quickly as possible in recommending changes to federal regulations that would result in charter halibut harvests equal to or less than the allocation during the next charter season, at the earliest. It acknowledges that it may select more restrictive measures to ensure that the allocation is not exceeded, because accurate projections of charter halibut harvests cannot be made because of the following unknowns: (1) number of future charter halibut anglers; (2) size (and weight) of halibut harvested; and (3) the allocation (if any part of the charter allocation floats in proportion to the annual IPHC action to set a combined commercial and charter quota. Underages would not be reallocated, but would accrue to the biomass.

The Council also stated its intent to request that the IPHC implement the catch sharing plan (CSP) between the commercial and charter halibut sectors each year. The IPHC already applies the CSPs for Area 2A and Area 4CDE each year. Based on the combined catch limit set by the IPHC, the bag and size limit for each area would be initially set. ADF&G would then project whether those bag limits and size limits result in the target harvest defined by the Council motion. If the charter sector's halibut harvest is projected to be too small or too large they would have the limited authority to adjust those management measures.

Section 1.7 of the EA provides more detail on possible Council procedures that would have been required had Option 1 through Option 3 been selected as the preferred alternative. These include (1) scheduling final action in December; with an option to forego SSC review of the RIR/IRFA; (2) preparing a

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<sup>65</sup> Except as modified under Element 5, whereby individual charter LEP holders would transfer commercial IFQs to GAFs to allow their clients to be exempt from restrictive measures on daily bag limits or fish size requirements implemented on charter halibut anglers who fish under the charter common pool allocation.

<sup>66</sup> Some of the allocation options under Element 1 would be binding on the charter sector upon implementation. Opportunities to lease commercial IFQ, under Element 5, would allow for increases in charter harvests by individual charter LEP holders, rather than the sector as a whole.

supplemental analysis (only) prior to Council action; (3) selecting two preferred alternatives, with implementation of the alternative that conforms to IPHC action; (4) selection of a fixed allocation in the preferred alternative, so as not to have Council action dependent on IPHC action; and (5) separate rulemaking for management measures would be recommended to facilitate implementation of IPHC annual management measures.

### Element 3 – Management Tool Box

Element 3 establishes the management toolbox to be used by the Council, under Element 1 - Options 1 through 3, if the charter industry exceeds its allocation. The Council would select the tool (or tools) that allow it to reduce charter harvest by an amount that is likely to allow the industry to “pay back” the halibut biomass an amount equivalent to the overage(s) in the preceding year(s). Element 3 establishes two tiers of measures that the Council can use to manage the charter common pool (Table 52). Tier 1 contains measures that allow the Council to manage the charter common pool for a season of historical length and a two-fish daily harvest limit. Tier 2 contains measures that could affect the season’s length or the daily catch limit. In addition, it includes the option of an annual limit.

**Table 52 Measures by tier.**

<b>Tier 1</b>	<b>Tier 2</b>
One Trip per Vessel per Day	Annual Catch Limits
No Retention by Skipper and Crew	One-fish bag limit for all or a portion of the Season
Line Limits	Season Closure
Second Fish of a Minimum Size	
Second Fish at or below a Specific Length	

If the Council is to meet the regulatory cycle, discussed in Element 2, it may choose to rely on estimates from past GHL analyses (NPFMC 2007b, 2007c) to estimate the effect of each management measure on the charter industry’s harvest.

Table 54 shows the estimated effect of each management measure by sub-option, as analyzed and reported by NPFMC (2007b, 2007c). Note that the analyses did not look at the same sub-options for each management area, as the Council tailored the sub-options to fit each area’s individual management needs. The analysis notes the following about each management measure.

#### Tier One Management Measures

##### One Trip per Vessel per Day

The recent GHL analyses estimated that limiting vessels<sup>67</sup> to one trip per day would reduce harvest between 1.8 percent and 2.4 percent in Area 2C, and between 5.5 percent and 6.3 percent in Area 3A (Table 53). However, the analyses noted that these numbers assume that none of the displaced passengers were able to reschedule their trip on other vessels during the season. Both GHL analyses and NPFMC (2007a) noted latent industry capacity that could allow a sizeable portion of displaced passengers to find replacement trips. Hence, the overall savings associated with this measure are likely to be smaller than the estimates provided above. Additionally, other Council analyses (NPFMC 2007b, c, and NPFMC 2006c) noted that the economic burden associated with this measure would be borne by providers whose business models focused on providing more than one trip per day. NPFMC (2007b) and public testimony at the June 2007 meeting described how the economic effect of this measure in Area 2C would be borne largely by a number of lodge LEP holders and smaller LEP holders focusing on quick trips for cruise ship passengers. NPFMC (2007c) and NPFMC (2006c) discussed how the economic burden of this measure in Area 3A would fall more heavily on the Central Cook Inlet area, than on ports in other areas, as businesses in this region are more likely to take multiple trips in a single day.

<sup>67</sup> This assumes an LEP would only be used aboard one vessel per day.



**Table 53**      **One trip per vessel per day.**

Management Measure	Sub-Option	Estimated Harvest Reduction (%)	
		Area 2C	Area 3A
One Trip per Vessel per Day	None	1.8%-2.4%	5.5-6.3%

**Table 54**      **Estimated effect of management measures.**

Tier	Management Measure	Sub-Option	Estimated Harvest Reduction (%)	
			Area 2C	Area 3A <sup>68</sup>
	One Trip per Vessel per Day	None	1.8%-2.4%	5.5%-6.3%
	No Retention by Skipper and Crew	None	4.3%-4.7%	10.4%
	Line Limits <sup>69</sup>	None	Not Analyzed	Not Analyzed
Tier 1	Second Fish of a Minimum Size <sup>70</sup>	45 Inches	18.8%-27.0%	32.5%-39.3%
		50 Inches	23.1%-30.8%	36.9%-43.3%
	Second Fish at or below a Length Limit <sup>71</sup>	32 Inches	19.7%-26.1%	18.2%-24.5%
		34 Inches	Not Analyzed	15.2%-21.1%
		36 Inches	Not Analyzed	12.1%-18.3%
	Annual Catch Limits	Four Fish	16.4%	6.5%
		Five Fish	9.3%	4.1%
		Six Fish	4.3%	2.1%
Tier 2	One-fish bag limit for All or a Portion of the Season <sup>72</sup>	Full Season	39.7%-57.8%	47.1%-62.9%
		May	1.8%-2.6%	5.0%-6.6%
		June	10.0%-14.6%	12.4%-16.5%
		July	14.5%-21.1%	17.8%-23.8%
		August	12.0%-17.5%	9.9%-13.2%
		September	1.4%-2.0%	1.8%-2.9%
	Season Closure <sup>73</sup>	Full Season	100.0%	100.0%
		May	5.2%	10.5%
		June	25.7%	26.0%
		July	35.4%	37.7%
		August	29.9%	21.2%
		September	3.7%	4.0%

Source: NPFMC (2007b) and NPFMC (2007c).

<sup>68</sup> Numbers for Area 3A reflect the analysis for NPFMC (2007c) updated with ADF&G's final 2006 harvest estimates.

<sup>69</sup> Neither NPFMC (2007b), nor NPFMC (2007c) analyzed line limits as an individual option.

<sup>70</sup> Upper estimates include an assumption of a 10% reduction in the demand for halibut charter trips.

<sup>71</sup> Upper estimate assumes that anglers catch the average fish below the length limit based on biomass. Lower estimate assumes that anglers are able to high-grade by one two-inch size class.

<sup>72</sup> Upper estimates include an assumption of a 30% reduction in the demand for halibut charter trips. The analysis did not make any adjustments for anglers rescheduling their trips to other parts of the season, which do not include the one-fish bag limit.

<sup>73</sup> Estimates based on ADF&G data provided for NPFMC (2007b) and NPFMC (2007c). Estimates do not include the effect of anglers migrating to other months or otherwise adapting to the closure. These estimates do not account for changes in demand that have occurred since 2006 including those changes resulting from a weak or recessionary national economy.

### No Retention by Skipper and Crew

The retention of halibut by skipper and crew, while fishing on paid halibut charters, has been banned by ADF&G emergency order since 2006, in Area 2C, and since 2007, in Area 3A. The 2007 GHM analyses noted that the ban reduces harvest by approximately 4.3 percent to 4.7 percent in Area 2C, and approximately 10.4 percent in Area 3A (Table 55). In June 2007, the Council selected a preferred alternative for managing Area 2C charter harvests that included a federal ban on skipper and crew harvests. In October 2007, the Council chose to postpone further action on management regulations for Area 3A until 2008, but encouraged ADF&G to continue the ban on skipper and crew harvest that it established in January 2007. Hence, the use of a skipper and crew harvest ban as a halibut management measure is already in place in both IPHC areas. However, that ban is subject to the continuation of ADF&G emergency orders, until NMFS publishes the final rule for the Area 2C regulatory package and the Council takes further action in Area 3A. With the ADF&G emergency orders in place, the establishment of federal regulations would not further reduce harvest by skipper and crew. However, both 2007 GHM analyses noted that a federal ban would allow skipper and crew to harvest other species, as the ADF&G emergency order is a blanket ban on the harvest of any species caught while on a halibut charter. Thus, the federal ban would result in a lowering of economic burdens that the ban places on skipper and crew, by allowing them to access other species. To the degree that skipper and crew can replace halibut harvest with other species, the federal ban would allow them to mitigate the burdens associated with a ban on halibut harvest. As noted in NPFMC (2006c), a ban on harvest can represent a significant economic burden to crew members, if they must replace protein caught during charter fishing trips with protein purchased from retail outlets.

**Table 55** No retention by skipper and crew.

Management Measure	Sub-Option	Estimated	Harvest	Reduction
		(percent)		
		Area 2C	Area 3A	
No Retention by Skipper and Crew	None	4.3%-4.7%		10.4%

### Line Limits

Tier 1 includes limiting the number of lines a vessel may have in the water while fishing for halibut. This management measure has not been analyzed as a stand-alone option in prior analyses. The skipper and crew portion regulation package for Area 2C and the skipper and crew management option for Area 3A (NPFMC 2007b) included line limits. The effect of reducing the number of lines is not known at this time. Theoretically, if anglers did not need the full-trip length to catch their halibut, then a vessel could carry more passengers than the number of lines allowed in the water at any one time and we would not expect a great change in harvest. However, a more likely scenario is that a lower line limit would reduce harvest, as anglers likely need most of their water time for their catch to equal current catch per unit of effort (CPUE). Economic theory suggest that anglers would be less willing to pay for a trip where they are not guaranteed a fair or equitable chance to fish, or where they perceive a reduced opportunity to catch and retain halibut. Thus, it is logical to expect that a lower line limit would reduce harvest, but the amount of the reduction would depend on, amongst other factors, CPUEs at the time of the ban and whether anglers can find replacement seats on boats where the line limit may not affect their experience. For example, if the line limit were to move to four lines per vessel, the two anglers who may have travelled as the fifth and sixth anglers on a vessel may find another boat where they can travel as the third and fourth anglers. A reduction in line limits could result in lower gross revenue earning, if anglers choose not to book in excess of the line limit. Additionally, if charter LEP holders are able to service the same number of active anglers through higher trip frequency, they would likely see higher operating costs and lower net profits. At this point, a line limit has not been analyzed in detail.

Because of the complexities associated with determining the species being targeted and the number of persons targeting halibut on a vessel, it is anticipated the line limit would be enforced by multiplying the clients (or maximum client endorsement, if more people are on the vessel than allowed by the client endorsement) by the bag limit. The number of halibut onboard the vessel may not exceed the product of that calculation. This also eliminates issues that could arise when clients catch halibut when targeting salmon. If the charter operator does not have a halibut LEP the clients would not be allowed to retain halibut harvested on that charter vessel.

#### Second Fish of a Minimum Size

The 2007 GHM analyses contained options that would have required the second fish in an angler’s two-halibut daily bag limit to be equal to or larger than one of two alternative limits, either a minimum of 45 inches or a minimum 50 inches (Table 56). These analyses estimated that a 45-inch minimum would have reduced harvest by from 18.8 percent to 27.0 percent in Area 2C, and between 32.5 percent and 39.3 percent in Area 3A; a 50-inch minimum would have reduced harvest by from 23.1 percent to 30.8 percent in Area 2C, and between 36.9 percent and 43.3 percent in Area 3A. The Council rejected these options in 2007 for both Area 2C and Area 3A, in part, because of the concern about measuring large fish at sea, increased handling mortality, and the potential for the minimum size limits to become *de facto* one-fish bag limits in sub-areas where larger fish are scarce. As noted in NPFMC (2007b) and NPFMC (2007c) the economic effects of this management measure depend on how charter anglers perceive the measure affects their experience. If anglers perceive this measure as a *de facto* one-fish bag limit and, as a result, book fewer trips, then charter LEP holders will generate lower revenue. This effect could spread to charter communities, if the booking of fewer trips results in fewer visits to those communities, lower overall local expenditures by tourists and locals, and lower expenditures by charter LEP holders. It is perhaps worth noting that making available the “opportunity” to catch a second fish, even if the probability of doing so is relatively small, is still an economically superior choice (i.e., higher WTP) for the charter client, to a one-halibut bag limit. Charter clients are not purchasing “halibut”, per se, but a bundle of attributes that includes the *expectation* of catching halibut. *Ex ante*, every sport fisherman leaves the dock with a belief that they “will” catch fish, even though, as data presented above suggests, most do not. Charter operators are marketing, and charter clients are purchasing, an “opportunity” (herein) to fish for halibut. If that “opportunity” is diminished, say by imposing a one-fish bag limit, the value of that charter experience, *ex ante*, is also diminished, even if no fewer halibut are actually harvested (again, the majority of halibut charter anglers catch zero halibut). Therefore, maintaining the “opportunity” to take that second halibut, even if the size parameter makes that probability low, has economic value to charter clients.

**Table 56**            **Second fish of a minimum size.**

Management Measure	Sub-Option	Estimated Harvest Reduction (percent)	
		Area 2C	Area 3A
Second Fish of a Minimum Size	45 Inches	18.8%-27.0%	32.5%-39.3%
	50 Inches	23.1%-30.8%	36.9%-43.3%

#### Second Fish at or below a Length Limit

A size limit on the second fish in an angler’s daily bag limit was part of the management package in place in Area 2C during part of 2007 and 2008. During 2009 a one-fish bag limit was imposed for Area 2C. That rule eliminated the need for any size restrictions on the second halibut.

NPFMC (2007c) contained three sub-options (i.e., 32 inches, 34 inches, or 36 inches in length) as part of the analyzed management options for Area 3A. The analysis estimated that these sub-options would have

reduced harvest between 18.2 percent to 24.5 percent, 15.2 percent to 21.1 percent, and 12.1 percent to 18.3 percent, respectively (Table 57). The Council postponed action in Area 3A, until 2008, when more data on 2007 Area 3A harvest would become available. As noted for the minimum length management measure, the economic effects of this management measure depend on how charter anglers perceive the measure affects their experience. If anglers perceive this measure as a de facto one-fish bag limit and, as a result, book fewer trips, then charter LEP holders will generate lower revenue. This effect could spread to charter communities if the booking of fewer trips results in fewer visits to those communities, lower overall local expenditures by tourists and locals, and lower expenditures by charter LEP holders.

**Table 57 Second fish at or below a length limit.**

Management Measure	Sub-Option	Estimated Harvest Reduction (%)	
		Area 2C	Area 3A
Second Fish at or below a Length Limit	32 Inches	Not Analyzed	18.2%-24.5%
	34 Inches	Not Analyzed	15.2%-21.1%
	36 Inches	Not Analyzed	12.1%-18.3%

#### Tier Two Management Measures

The October 2007 motion contains three Tier 2 management measures. These measures are annual limits, a one-fish bag limit for all or a portion of the season, and a partial or full season closure.

#### Annual Catch Limits

The Council considered annual limits in its 2007 decision-making process for enacting new management measures in both Area 2C and Area 3A. A four-fish annual limit is included in the preferred alternative that is currently in the NMFS rule-making process. NPFMC (2007b) estimated that a four, five, or six-fish annual limit would reduce harvest under 2006 conditions by approximately 16.4 percent, 9.3 percent, and 4.3 percent, respectively (Table 58). The Council considered the same four, five, or six-fish annual limit in Area 3A, but postponed action until 2008. NPFMC (2007c) estimated that these annual limits would reduce client harvest under 2006 conditions by approximately 6.5 percent, 4.1 percent, and 2.1 percent. Without a skipper and crew harvest ban, the measures reduce combined client and skipper/crew harvest by 15.3 percent, 12.9 percent, and 10.7 percent, respectively. The reason for this large difference is the fact that in Area 3A, skipper and crew members represent the majority of harvest associated with individuals who harvest more than a couple fish aboard charter vessels, annually. If the a skipper and crew ban is in effect, then the harvest savings associated with the annual catch limit management measure is between 2.1 percent and 6.5 percent of the pre-ban harvest. If the skipper and crew ban is not in effect, then the annual catch limit results in higher percentage savings from a higher pre-ban harvest, because a portion of the halibut that would have been saved by a skipper and crew ban is now saved by the annual limit.

The effect of annual catch limits varies slightly from year to year. As noted in NPFMC (2007b) and NPFMC (2007c), the estimated savings associated with annual limits, based on analysis of 2006 data, are similar to the estimated saving that analysts estimated in prior analyses, such as NPFMC 2006, using data from 1996 to 2004. The difference between the prior analysis and the analyses conducted in 2007, is that ADF&G's 2006 logbooks introduced the capability of tracking anglers by license number. The 2006 analysis had relied on estimates from the Statewide Harvest Survey (SWHS).

**Table 58 Annual limits.**

Management Measure	Sub-Option	Estimated Harvest Reduction (%)
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	Area 2C	Area 3A
Annual Catch Limits	Four Fish	16.4%
	Five Fish	9.3%
	Six Fish	4.3%

### One-fish bag limit for All or a Portion of the Season

In 2007, the Council considered options for a one-fish bag limit for the month of May, or June, or July, or August, or September, or for the entire season (see NPFMC [2007b, 2007c]). The estimated effect of a full-season bag limit reduction is from 39.7 percent to 57.8 percent in Area 2C, and from 47.1 percent to 62.9 percent in Area 3A (Table 59). The estimated effects of smaller bag limits in individual months are proportional to the amount of harvest occurring in that month. For example, July is the busiest month in both areas, and a smaller bag limit in that month would likely result in larger harvest savings than in any other single month, *ceteris paribus*. As noted in prior analyses, the actual harvest savings associated with single month reductions in bag limits would likely be smaller than estimated, because of anglers' ability to shift their trips to other months. The reduction in actual harvest savings relative to the estimate would depend on factors such as how much lead time anglers have before the bag limit reduction becomes effective and how flexible anglers can be with their fishing trips.

**Table 59 Estimated savings from a one-fish bag limit, 2006 conditions.**

Length of Closure	Area 2C	Area 3A
Full Season	39.7%-57.8%	47.1%-62.9%
May	1.8%-2.6%	5.0%-6.6%
June	10.0%-14.6%	12.4%-16.5%
July	14.5%-21.1%	17.8%-23.8%
August	12.0%-17.5%	9.9%-13.2%
September	1.4%-2.0%	1.8%-2.9%

Source: NPFMC (2007b) and NPFMC (2007c).

As noted in NPFMC (2007b) and NPFMC (2007c) the effect of the one-fish bag limit would depend primarily on how anglers react to the fact that the reduced bag limit changes some of the essential characteristics of the current product/experience being offered by charter LEP holders. A reduction in demand will mean lower revenues for charter LEP holders and potentially lower expenditures in communities. If clients could not, or chose not to, take a halibut trip and did not spend this money elsewhere in the local economy, then this option would result in local or regional economic losses related to client expenditures. However, if those clients spend the dollars they would have otherwise spent on charter experiences, on other experiences within the same community, then the change results in a redistribution of expenditures, rather than a reduction in community-specific expenditures. The economic effects of this option are also likely to depend on geographic and temporal factors. For example, anglers are more likely to reduce participation when substitute species are not available; this means that many Area 2C communities will experience the most reduction in participation between the end of June and the beginning of August, a period when king and coho salmon are not readily available. For example, inside passage communities are more likely to experience these effects, than western coastal communities such as Sitka, which have greater multi-species availability. The analysis for NPFMC (2007b) and NPFMC (2007c) indicated that demand reductions up to 30 percent would not be unexpected in both areas from this type of management measure. Key informant interviews conducted during the April 2008 meetings indicated that some inside passage lodge operators were experiencing reduced bookings for July 2008, as anglers waited to see if NMFS would publish a final rule instituting a one-fish bag limit for halibut in Area 2C. The foregoing discussion of the impact of a one-fish bag limit treats only economic "activity" (e.g., local employment, income). These activity measures are distinctly different from considerations of economic "costs" and "benefits."

In cost/benefit terms, the analytical concern here is with changes in utility (or welfare) resulting from modifying through regulation the patterns of halibut use. As noted above in the discussion of “size limits on a second-halibut,” imposition of a one-fish bag limit in the charter fishery effectively diminishes the utility (i.e., value) associated with making a charter halibut trip. And this welfare reduction occurs independently of the number of halibut an individual actually harvests (recalling data presented earlier indicating that most do not catch any halibut). Put another way, charter halibut trips are “pre-purchased,” at least in part, based upon an “expectation” of a future experience with specific attributes. Whether those specific expectations are realized during that particular trip does not enter into the original purchase decision, because the two activities (i.e., buying versus completing a charter trip) are separated from one another in time. In effect, the charter client is purchasing an “opportunity” to fish for halibut, based upon a suite of specific *ex ante* expectation. He or she must determine, based on incomplete information, whether the probability of attaining that suite of expectations is sufficiently high to justify incurring the threshold price of purchasing that opportunity (i.e., they conduct a benefit/cost analysis, based on their personal utility function). However, imposition of a one-fish bag limit, *a priori*, removes the “opportunity,” no matter how remote that chance might be, to take that second halibut. Thus, the value of a halibut charter trip is administratively reduced at the point of purchase.

### Season Closure

Prior Council analyses have not rigorously evaluated the economic effects of either partial or full season closure options. However, ADF&G has provided these analyses with estimates of harvest by month. Table 60<sup>74</sup> shows the portion of 2006 through 2010 harvest that occurred in each month between May and September each year. These five months account for more than 99 percent of charter halibut harvest in both IPHC areas. The distribution of harvest may be representative of the harvest foregone, if anglers have little time to adapt to a proposed closure. Closures would be less effective, if anglers have forewarning of the closure and if they have time to fish before or after the closure in the same season that the closure occurred. For example, if anglers were informed in January of an August-September closure, we would expect that anglers with flexibility in their fishing dates would simply try to schedule dates in other months. Latent industry capacity would allow at least some to find replacement fishing trips. On the other hand, an announcement in mid-July of an August-September closure would leave anglers with little time to react to closure and a very small portion of the halibut season over which they could try to find replacement trips.

The economic effects of a partial or full season closure have not been quantified by prior analyses. An accurate quantitative estimate of the economic effects is not possible for several reasons, including the lack of data on the size and expenditures associated with various market segments in each IPHC Area. For example, NPFMC (2007b) notes that the Area 2C charter halibut market is largely made up of four general components: cruise vessel passengers, non-resident lodge guests, non-resident non-lodge guests, and resident anglers. While the data show that the Area 2C charter halibut fishery is predominantly a non-resident fishery, there are no data on the size (i.e., the number of trips) of the non-resident market segments. Each of these segments is associated with different cost levels. Half-day trips, such as those taken by cruise passengers, reportedly can cost as little as \$150, not including fishing licenses, meals, or other sundry items; the charter fee for a full-day trip generally ranges between \$225 and \$300. Assuming an average charter price for all trips of \$225 per client day, results in charter fee expenditures of \$20.8 million in 2006 in Area 2C. These estimates do not include lodging, meals, license fees, sales taxes, souvenirs, or other items. For Area 3A, results suggest charter fee expenditures of \$31.2 million in 2006. The effect of a partial or full-season closure will depend on how it affects clients’ decisions, from whether or not to visit Alaska, to what ancillary activities will be purchased during their visit (e.g., halibut charter fishing, glacier tour flights, whale watching cruises, rustic salmon-bakes). One might speculate that cruise ship passengers would likely find another on-shore excursion, rather than cancel their trip to Alaska, as

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<sup>74</sup> This table demonstrates the consistency of charter halibut harvest by month.

fishing is likely to be one among many parts of their vacation experience. Lodge clients may have a different response. For example, it seems reasonable to assume they would either rebook their trip, to a time of the year with an open season, or cancel their trips all together. Local residents would have the greatest ability to adapt to proposed season closures, as they have the greatest short-term flexibility in their fishing schedules. Resident anglers are a smaller portion of the fishery in Area 2C than they are in Area 3A, so the analysis would expect greater harvest savings (as a percentage of potential harvest) from a partial-season closure in Area 2C. In addition to regional variation in effects, the effect of season closures will vary from community to community. Particularly hard hit will be those communities that focus on destination anglers (and the anglers they serve) and are not part of the regular tourist circuit.

Closure economic effects could be mitigated if charter LEP holders were able to rotate their craft into non-consumptive uses or encourage anglers to book trips targeting other species. This idea has frequently been mentioned by the commercial sector as an option for charter LEP holders to limit the losses associated with a season closure. However, many operators providing these services already exist and it is not clear what level of success they would have in transferring their skill sets to these businesses and at generating new customers. Certainly a certain percentage of angling clients for whom angling is the primary purpose of their trip would find other angling trips to take instead of coming to Alaska.

**Table 60** Estimated percentages of charter harvest by month, 2006-2010. Source is ADF&G charter logbook data as of May 2, 2011 (Source: ADF&G).

Length of Closure	Percentage of Charter Halibut Harvest by Month									
	Area 2C					Area 3A				
	2006	2007	2008	2009	2010	2006	2007	2008	2009	2010
Feb	0.0%						0.0%		0.0%	0.0%
March	0.0%	0.0%			0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
April	0.0%	0.0%	0.0%	0.1%	0.0%	0.4%	0.3%	0.2%	0.2%	0.2%
May	5.1%	4.7%	4.5%	5.1%	3.4%	10.6%	8.5%	8.9%	8.1%	7.9%
June	25.7%	24.6%	23.8%	23.4%	23.3%	25.9%	25.0%	24.2%	23.6%	23.1%
July	35.4%	33.7%	35.1%	35.3%	37.4%	37.7%	37.8%	37.7%	36.6%	36.9%
Aug	30.0%	33.6%	33.3%	32.0%	32.6%	21.3%	24.3%	25.9%	27.0%	27.2%
Sept	3.7%	3.5%	3.3%	4.0%	3.2%	4.0%	3.9%	2.9%	4.3%	4.5%
Oct	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.2%	0.1%	0.1%
Nov			0.0%			0.0%	0.0%	0.1%	0.0%	0.0%
Dec						0.0%	0.0%	0.0%	0.0%	0.0%

Totals add up to 100% for each area and year. Cells with percentages listed as “0.0%” may have had a few trips but they represented less than 0.1%. Empty cells had no charter trips.

#### Analytical Limitations

The approach described in this element provides a simple method of estimating the effect of management measures to reduce charter industry halibut harvest. However, there are limitations to the approach that should be recognized, including the effect of changing average weights, the effect of changing harvest composition, and the difficulty of accounting for the interaction effects associated with utilizing several management measures at the same time.

A change in average harvest weights could increase or decrease the effectiveness of length-based management measures. For example, analyses in NPFMC (2007b) and NPFMC (2007c) estimated the effect of a minimum size on a second fish, by looking at the difference between 2006 average weights and the estimated average weight of the average fish caught below the minimum length. These calculations provided an estimated percentage reduction in the overall harvest. In the future, if the overall average weight goes down and the estimated average weight of the average fish below the minimum size stays the same, then the effect of this type of management measure would be smaller than was predicted in NPFMC (2007b) and NPFMC (2007c). The second column in Table 61 shows how a decline in average weight would affect the estimated savings from a 32-inch length limit, based on 2006 Area 3A data. If

average weight declined from 17.9 lb to 15.9 lb, the estimated savings associated with this management measure would drop from 24.3 percent to 21.5 percent. On the other hand, if anglers are successful in increasing the average size of the fish they retain (i.e., high grading), then length-based management measures would be more effective than predicted in NPFMC (2007b) and NPFMC (2007c). As Table 61 shows, the same measure would now reduce harvest by 26.7 percent, instead of 24.3 percent. Hence, the estimated effect of each alternative listed above must be considered in the context of the descriptive statistics for that year's harvest.

**Table 61** How changes in average weight can affect the accuracy of prior estimates.

Category	32" Limit with 2006 3A Data	Average Weight Goes Down	Average Weight Goes Up
Number of Fish Caught	204,115	204,115	204,115
Percent Second Fish	47.1%	47.1%	47.1%
<i>Average Weight of All Fish</i>	<i>17.9</i>	<i>15.9</i>	<i>19.9</i>
Average Weight below Minimum Length <sup>75</sup>	8.6	8.6	8.6
Net Weight Removed in Fishery	9.3	7.3	11.3
Overall Weight Not Removed From Biomass	CEY (minus) 891,106	CEY (minus) 698,943	CEY (minus) 1,083,269
Percentage of Harvest	24.3%	21.5%	26.7%

Source: NEI, 2007.

A change in harvest composition (the number of fish caught in each size category considered) can also affect the accuracy of total catch estimates since the analysis assumes the historic percentage of halibut in each size category will be caught in the future. Harvest composition can change for a variety of reasons including fishing areas that tend to produce larger/smaller fish, changes in the size of fish in the local population, or extending fishing time until a larger fish is caught.

NPFMC (2007c) estimates that under 2006 fishing conditions, the institution of a 45-inch minimum size limit on the second fish in the angler's daily bag limit would reduce harvest by 32.5 percent, all else equal. This estimated reduction occurs because anglers that only catch halibut less than 45 inches will not be allowed to retain a second halibut under the new restriction and any increase in halibut taken that are 45 inches or greater - is less than the weight of halibut foregone that are less than 45-inches. Data from the 2006 fishing year indicates that 31 percent of the harvest by weight came from halibut at or above, the 45-inch standard. Because we cannot predict with certainty how the size of halibut caught in the future may change, it is possible that anglers may be less successful catching the 45-inch or larger fish (the number of 45-inch or larger fish that are caught declines). If anglers are less successful catching 45-inch or larger halibut, the estimated effect of the management measure increases since the total weight of halibut catches is reduced. For example, if only 25 percent of harvest is of legal size and total harvest is the same, the estimated harvest reduction associated with the management measure increases to 35.3 percent, because anglers attempt to replace smaller fish that were of legal size under the status quo with relatively rarer, larger fish.

Conversely, the effectiveness of the management measure would decline if 45-inch or larger fish become a larger portion of the harvest (indicating greater relative success in targeting them). For example, if 45-inch or larger halibut represented 40 percent (by weight) of the total catch, then the estimated effect of the management measure falls to a 28.2 percent reduction in harvest.<sup>76</sup>

#### Element 4 – Timeline (Deleted)

<sup>75</sup> This includes the average weight of all fish that are less than the minimum size limit. All halibut larger than the minimum size are excluded from the calculation.

<sup>76</sup> These examples assume all other 2006 conditions, including total harvest weight, stay constant.



The discussion under Element four was deleted at the Council's request, because the timelines discussed applied to issues of modifying charter harvest regulations after an overage was determined to have occurred. The Council also indicated that the timelines would need to be reviewed to determine where changes could be made. Because they did not intend on using those timelines they felt additional work updating the timeless was not justified. Under the preferred alternative, regulations are adjusted based on ADF&G staff projections of the upcoming year's charter harvest. Guided angler regulations are adjusted before the fishing season begins to modify charter harvests. Because regulations are adjusted based on projections of future harvest and not estimates of past harvest, the section outlining timelines when regulations could be modified based on historical catch is not needed.

### **Element 5 – Supplemental Individual use of GAF**

Element 5 would allow charter LEP holders to lease commercial IFQ to provide charter anglers with additional harvesting opportunities in excess of the annual charter allocation to the common pool. The LEP holder would ask NMFS to convert the leased IFQ into Guided Angler Fish (GAF). The LEP holder could then use the GAF to provide anglers with additional harvesting opportunities, providing that the angler never exceeds the daily bag and size limits in place for unguided anglers. In a simple example, an LEP holder could lease 100 lb of commercial IFQ. NMFS would then convert the IFQ into GAF using a predetermined average weight that is provided by ADF&G. For example, if the average size fish is 20 lb, then the 100 lb of IFQ could be transferred to the LEP holder as five GAF (i.e., five halibut). If charter halibut regulations specify that each angler's daily bag limit is one fish of any size, while an unguided angler may harvest two fish of any size, then the LEP holder can use one GAF to allow one charter angler to harvest two fish of any size. That is, the GAF would be used to allow a charter angler to harvest halibut under the same regulations in place for unguided anglers, regardless of the management measure in place for charter anglers fishing in the common pool (e.g., one fish, one fish with a maximum size limit of 28 inches, or 2 fish with one of any size and the other larger than 32 inches).

If the unguided bag limit is one fish of any size and the charter angler bag limit is one fish of any size, there is no reason to use GAF. When the charter angler is limited to one fish and the unguided angler may harvest two fish, the charter operator and client may use a GAF to harvest one additional halibut. Also, if there is size limit imposed on a charter angler fish and those regulations do not exist for the unguided angler, the charter operator/charter angler could use a GAF to harvest a halibut that falls outside the size limit. Therefore, anytime a charter angler harvests a halibut that would be legal for an unguided angler to harvest, but not a charter angler, they would need to use a GAF to legally retain that halibut. The charter operator and charter angler would need to agree on any fees charged for harvesting the GAF. Depending on the structure of the payment, it could increase the total cost(s) to the charter operator, the charter angler, or both. The total increase in cost will, over the long run, equal the cost of leasing a pound of IFQ, multiplied by the standard conversion rate of IFQ to GAF for that area.<sup>77</sup>

Charter LEP holders must hold a sufficient number of GAF to cover any halibut harvested in excess of the charter angler bag limit, *prior to taking a trip*. They must also be able to show proof of holding the GAF if they are requested to by an authorized enforcement agent. Charter LEP holders that do not hold sufficient GAF to cover halibut caught in excess of the charter bag limit may not allow clients to retain those fish. The GAF used by the charter angler is deducted from the LEP holder's account of unused GAF. Additional discussion about how the GAF creation and transfer system would work is included in section 3.3.

The Council is not bound to select each of the provisions noted under Element 5. For example, if the Council does not act or select Provision E, then there is no reversion provision for unused GAF. In such a

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<sup>77</sup> For example, if the cost to lease one pound of IFQ in an area is \$4.00 and the standard conversion rate of IFQ to GAF is 20 lb of IFQ to one GAF, then the cost to lease the GAF would be \$80.00. That cost could, depending on a number of exogenous factors (e.g., level of local charter competition), be divided between the charter operator and the client.

case, NMFS SF and RAM staffs have indicated that they will interpret the IFQ-to-GAF leases as temporary, one-way transfers that will expire at the end of the calendar year.

The following sections discuss each provision under Element 5.

#### Provision A – Leasing Commercial IFQ to Guided Anger Fish

##### *Leasing commercial IFQ for conversion to Guided Angler Fish (GAF).*

1. An LEP (Limited Entry Permit) holder may lease IFQ for conversion to GAF for use on the LEP.
2. Commercial halibut QS holders may lease up to 1,500 pounds or 10% (whichever is greater) of their annual IFQ to LEP holders (including themselves) for use as GAF on LEPs. If an IFQ holder chooses to lease to a CQE, then the same limitations apply as if they were leasing to an individual charter operator—1,500 lb or 10% whichever is greater—the 100% has no application here. *With regard to CQE leasing: any quota which a CQE holds, regardless of its origin, could be leased up to 100% to eligible residents of the CQE community. For example, a CQE may hold quota share derived from purchase, a lease from another qualified CQE, or a lease from an individual, and then lease out up to 100% of the quota it holds.*<sup>78</sup>
3. No more than 400 GAF may be assigned to an LEP endorsed for 6 or fewer clients.

Suboption: No more than 600 GAF may be assigned to an LEP endorsed for more than 6 clients.

Provision A creates an inter-sector trading program that would allow the charter sector to increase its sector allocation by a market-based, willing seller/willing buyer program, through civil contracts or informal agreements between individual commercial IFQ holders (both persons and CQEs) and individual LEP holders. It also would set limits on the amount of commercial halibut IFQ that IFQ holders may lease to individual charter LEP holders. All persons and CQEs holding commercial QS may not lease more than 10% of the IFQ they were initially issued or 1,500 lb, whichever is greater, to any LEP holder. That includes any transfers they made to themselves, if they hold both commercial IFQs and LEP.

Provision A-1 would establish the ability for LEP holders to lease IFQ for conversion to GAF.

Provision A-2 would set a cap on the amount of commercial halibut IFQ that may be leased as GAF from each IFQ holder. The proposed levels selected for analysis allow IFQ holders to lease 1,500 lb or 10 percent of holdings, whichever is greater. The provision allows IFQ holders with less than 15,000 lb of IFQ to lease as much as they own, up to a maximum of 1,500 lb, while those with more than 15,000 lb IFQ could lease 10% of their holdings. The provision does not specify restrictions based on vessel class or block shares, so all QS are included in this analysis.

Community Quota Entities The Council intends the following application of limits for transfers of IFQs held by CQEs:

1. If the CQE is leasing IFQ from an IFQ holder, the CQE is limited to leasing 10% or 1,500 lb of those IFQs to use as GAF by a CQE LEP.
2. If the CQE is leasing its IFQ to an individual that is NOT an eligible CQE community member, the CQE is limited to leasing 10% or 1,500lb to use as GAF by the (non-community) LEP holder.
3. If the CQE is leasing its IFQ to an eligible CQE community member, the CQE can lease 100% of the IFQs that it holds or leases to use as GAF by CQE community members that have or use LEPs (i.e., the proposed cap on GAF transfers would *not* apply to CQEs that transfer held or leased IFQ to CQE community members with LEPs). The Council intends that eligible CQE community members that have or use the CQE LEPs also have maximum flexibility on the use of those IFQs and GAFs within the community. The CQE could use its IFQ (held or leased) as it needed in a given year, either as GAF (up to

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<sup>78</sup> Italicized text explains current regulations; no regulatory change is needed.

100%) or as commercial IFQ (up to 100%) or any combination of the two. The key distinction here is that the same leasing caps are *not* intended to apply to CQEs operating within the community.

4. Finally, the CQE would be allowed to *both* lease up to 10% or 1,500lb to an individual with an LEP (non-CQE participant) to use as GAF *and* lease the remainder of the IFQ held or leased, up to 100%, to eligible CQE community members with LEPs to use as GAF. This feature is intended so that the CQE would be allowed to assist a non-eligible community member (e.g., a local lodge) to obtain GAF (as described under #2 above).

While only one CQE holds halibut QS (and that CQE holds Area 3B QS and is, therefore, not part of this action), this CQE and others may purchase Area 2C and 3A halibut QS; they would be subject to the same commercial use caps as any other QS holder. Associated IFQs would be leased to eligible residents of the community represented by the CQE. Under the charter halibut LEP program, eligible CQEs also may be issued permits for use in the community represented by the CQE (i.e., the charter trip must originate or terminate in the CQE community). In April 2008, the Council clarified that it intends to provide maximum flexibility to CQEs to support either commercial or charter business development, depending on that community's needs.

Under Provision A-2, a CQE would be allowed to convert 100 percent of its annual halibut IFQ to GAF for use on its own Community Charter Halibut Permits (CCHP), may lease 100 percent of its IFQ out as GAF to another CQE, may lease 100 percent of its IFQ to community residents (subject to limitations at 679.42(f)(6)),<sup>79</sup> or may lease GAF to its own community residents that hold CHPs. Therefore, the only limitation under existing regulations on CQE leases is that no individual that receives IFQ may hold, individually or collectively, more than 50,000 lb of halibut IFQ; this provision would extend that limitation to the GAF program, separately or in combination with IFQs. There is no limitation on how much of a CQE's IFQ or GAF could be leased for use on any one CCHP held by the CQE. The distribution of a CQE's halibut IFQ to CCHPs is left to the discretion of the CQE directors. GAFs transferred from CQE holdings must be used in the community represented by the CQE (the trip must originate or terminate in the CQE community).

Regulations at 50 CFR 679.42(l) state "A CQE receiving category B or C halibut QS through transfer may lease the IFQ resulting from that QS only to an eligible community resident of the eligible community represented by the CQE." Most CCHP holders are expected to be businesses. Therefore, residents in this context will include both real people and businesses, which also would be treated as individuals. This provision also implies that a CQE may not lease IFQ it holds to another CQE for use as commercial IFQ. It may lease IFQ it holds for use in the commercial sector only to residents of its community. The term "resident" needs to be clarified in this context, because businesses are expected to hold CCHPs. For a business to be considered a resident of a community, it could either be required to be headquartered in the community or operate in that community. This provision is intended to increase economic activity in these remote communities that do not have a "fully" developed halibut charter industry. Requiring that the charter activity take place in the community will help insure the community derives economic benefit from those operations. Therefore, it is assumed that "resident" means that the CCHP holder must operate its business out of the community.

All other leasing of halibut IFQ under this provision is limited to the charter sector for use as GAF. Allowing broader leasing for commercial IFQ harvest could circumvent leasing prohibitions that are currently in place for class B and C IFQ. CQEs that hold CHPs may lease GAF from QS holders under the same rules and caps as apply to any other CCHP holder. They may also lease GAF from other CQEs, as discussed earlier.

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<sup>79</sup> 50 CFR 679.42(f)(6) states that "No individual that receives IFQ derived from halibut QS held by a CQE may hold, individually or collectively, more than 50,000 lb (22.7 mt) of IFQ halibut derived from any halibut QS source."

Estimates of the number of qualified businesses and of the permits to be issued under the charter LEP are reported in Table 62 (NMFS 2010). An estimated 501 permits will be issued to 229 businesses for IPHC Area 2C and an estimated 410 will be issued to 291 businesses for Area 3A.

**Table 62 Estimated number of permits that would be issued and the number of businesses receiving the permits under the Council’s preferred alternative.**

Area	Permits	Businesses
2C	501	229
3A	410	291

Source: ADF&G Saltwater Logbook data, 2004, 2005, and 2008. These estimates differ slightly from those in the corresponding table in the analysis of the moratorium itself. The changes reflect edits and corrections made to the underlying data set between the time that analysis was completed in September 2009 and March 2010, when the current analysis was completed.

Table 63 shows the estimated amount of GAF that would be available, based on 2006, 2007, and 2008 QS-to-IFQ conversion ratios and 2005 average weights. The table demonstrates that the amount of GAF that is available will change, depending on QS-to-IFQ conversion ratios (which are dependent on biomass and the IPHC catch limit determinations) and average weights. Higher average weights and higher QS-to-IFQ conversion ratios will lead to lower availability of GAF; while lower average weights and lower QS-to-IFQ conversion ratios will lead to higher availability of GAF from a given pool of QS holders.

**Table 63 IFQ and GAF available for leasing under Provision A-2 (2006 conditions).**

Area	IFQ Available for Lease (lb)	Approximate GAF Equivalent	Number of Holders Allowed to Lease More than 1,500 lb	Number of Holders Allowed to Lease 1,500 lb or Less
<b>2006 Data</b>				
2C	1,832,000	96,000	218	1,141
3A	3,306,000	186,000	465	1,328
<b>2007 Data</b>				
2C	1,491,000	78,000	96	1,263
3A	3,144,000	177,000	426	1,139
<b>2008 Data</b>				
2C	1,467,000	77,000	110	1,249
3A	3,138,000	176,000	436	1,088

Source: NEI Estimates from <http://www.alaskafisheries.noaa.gov/ram/06ifqunitf.CSV> 2007.

The amount and price of IFQ that commercial IFQ holders may lease to the charter sector are unknown. A possible indicator for lease prices may come from the market for leasing halibut IFQ for Class A vessels. In 2005, these leases averaged \$1.58 per pound of IFQ (RAM 2009<sup>80</sup>). More recent data on the per pound lease price of Class A halibut IFQ are confidential and cannot be used for this analysis. However, leasing between QS holders is relatively restricted within the halibut IFQ program and leasing represents a very small portion of the overall halibut QS market.<sup>81</sup> Thus, it is not clear that Class A lease prices represent a good indicator of potential lease prices, as most QS holders do not participate in, or have access to, that market. The eventual lease price would depend on factors such as the current ex-vessel price of halibut, the willingness of commercial QS holders to lease IFQ to charter LEP holders, the willingness of charter customers to accept price increases to pay for leased fish, and the willingness of charter LEP holders to lease IFQ from commercial QS holders.

<sup>80</sup> <http://alaskafisheries.noaa.gov/ram/ifqreports.htm>

<sup>81</sup> In 2006, 0.7% of Area 3A QS was leased and 1.2% of Area 2C QS was leased.

A basic question arising from Provision A-2 is:

Would Provision A-2 allow enough IFQ to become available to meet the projected demand for GAF, if charter halibut demand rises to the maximum amount projected by the demand projections model?

**Note on projections:** The projections of halibut CEY used to produce charter allocations in this analysis were prepared for the Council in 2008. Actual CEYs from 2008 through 2011 in both Area 2C and Area 3A were lower than the projections prepared for this analysis. As a result, the charter halibut allocations calculated from projected CEYs in this analysis are likely higher than the charter halibut allocations that would result from updated projections. However, the description of the effects of the options on charter harvest and the charter sector provided in this analysis would also be applicable to lower charter sector allocations. An analysis of the effects of updated CEY projections under the preferred alternative is presented below in the Analysis of the Preferred Alternative section titled “New Information Since Final Action.”

The analysis using 2008 projections concluded that if long-term growth continued in Area 2C, Provision A-2 would eventually constrain charter sector growth through a lack of IFQ to convert to GAF. The analysis compared the maximum estimated 2011 demand (i.e., the 95 percent upper confidence interval) for charter halibut under a two-fish bag limit, with the estimated allocation to the charter sector in 2011. The analysis estimated that the 95 percent upper confidence interval on charter halibut demand under proposed conditions in 2011 in Area 2C, is 2.32 Milb.<sup>82</sup> As shown in Table 64, estimates for proposed allocations for 2011, range from 830,000 lb to 1.9 Milb; this would leave a shortfall between 420,000 lb and 1.49 Milb to be covered by GAF. This shortfall equals between 21,000 GAF and 76,000 GAF. So, the analysis expects that the charter sector could demand between 21,000 and 76,000 GAF by 2011 to provide charter anglers with a two-fish bag limit equivalent to that experienced by unguided anglers, depending on the allocation scenario. The estimated maximum amount of GAF available is between 50,000 and 100,000, depending on the QS-to-IFQ conversion ratio and average harvest weights exhibited between 1995 and 2006.<sup>83</sup> Thus, under some allocation scenarios (e.g., 1a, 1c, 1d, and 4; and potentially 1b and 3a) the charter sector’s demand for GAF would be equal to, or greater than, the maximum amount of GAF available. If demand growth continued at a high rate past 2011, then the Area 2C charter sector could require more GAF than the commercial sector would be allowed to lease.<sup>84</sup> This discussion ignores the price/cost effect of purchasing GAF. For example, as GAF demand increases, prices will rise and drive up the cost of charter trips for those individuals that use GAF and potentially reduce demand and the need for GAF. It is unclear how sensitive anglers will be to paying for GAF. Additionally, it is unlikely that LEP holders will be able to lease every eligible IFQ from QS holders, as some QS holders will prefer to fish their IFQ, rather than lease it to the charter sector. The analysis is unable to quantify how much of the potential maximum available GAF will actually be functionally available through business-to-business contracts.

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<sup>82</sup> This is an estimate of what demand might be under current trends and assuming no restrictions except the current ban on skipper and crew harvest.

<sup>83</sup> In 1998, average harvest weight rose to 29.1 lb, which would drop the maximum number of GAF available to 63,000.

<sup>84</sup> GAF availability may be constrained before the maximum leasing allowance is reached, given that market incentives may be insufficient to induce commercial QS holders to lease 100% of the available QS.

**Table 64 Estimated maximum 2011 demand for GAF in Area 2C by allocation scenario.**

Category	Percentage Based Allocations				Fixed Pound Allocation			Mixed Allocation			Pref. Alt.
	1a	1b	1c	1d	2a	2b	2c	3a	3b	3c	4
Estimated 2011 Allocation (Mlb)	0.92	1.22	0.83	1.07	1.43	1.69	1.90	1.18	1.41	1.36	1.07
Demand-Allocation Differential (Mlb)	1.40	1.10	1.49	1.25	0.89	0.63	0.42	1.14	0.91	0.96	1.25
GAF Required (2006 Average Weight)	70,000	55,000	75,000	63,000	45,000	32,000	21,000	57,000	46,000	48,000	63,000
GAF Required (2002-2006 Average Weight)	71,000	56,000	76,000	63,000	45,000	32,000	21,000	58,000	46,000	49,000	63,000

Source: NEI Estimates, 2008.

Note: The demand-allocation differential is based on demand estimates for a 2-fish bag limit with no size limit (unguided angler bag limit) and the sector allocation. The GAF required assumes that everyone that would take a trip under the 2-fish bag limit would fish under the charter bag limits and be willing to purchase GAF to harvest a 2-fish daily bag limit.

In Area 3A, the estimated maximum demand for GAF in 2011, is likely to be a relatively modest portion of the potential pool of leasable GAF. The analysis estimates that the 95 percent upper confidence interval for demand is 4.20 Mlb. As shown in Table 65, the IPHC has estimated that five proposed scenarios (i.e., 1c, 2a, 2b, 2c, and 3a) would provide less than 4.20 Mlb to the charter sector in 2011. The estimated demand for GAF for those scenarios ranges from 2,000 to 30,000 GAF, while the estimated maximum amount of GAF available ranges from 150,000 to 190,000 GAF, based on average weights between 1995 and 2006. Thus, similar to the results in 2007(c), the analysis concludes that the leasing limits for commercial QS holders could provide enough GAF to accommodate growth in Area 3A for the reasonably foreseeable future, as long as charter LEP holders and commercial QS holders can reach mutually agreeable leasing arrangements. Under the preferred alternative, the charter sector is projected not to need GAF to meet its projected demand in 2011. Based on growth in demand and the IPHC's estimates of future combined catch limits, it appears the charter angler bag limit will remain at 2-fish through 2015. Because charter and unguided bag limits are projected to be the same, leasing GAF would provide no additional benefits to charter anglers. Therefore, it is projected that GAF would not be leased during this time period in Area 3A.

**Table 65 Estimated maximum 2011 demand for GAF in Area 3a by allocation scenario.**

Category	Percentage Based Allocations				Fixed Pound Allocation			Mixed Allocation			Pref. Alt.
	1a	1b	1c	1d	2a	2b	2c	3a	3b	3c	4
Estimated 2011 Allocation (Mlb)	4.65	5.08	4.19	4.19	3.65	4.01	4.15	4.15	4.63	4.17	4.62
Demand-Allocation Differential (Mlb)	-0.45	-0.88	0.01	0.01	0.55	0.19	0.05	0.05	-0.43	0.03	-0.42
GAF Required (2006 Average Weight)	0	0	1,000	1,000	30,000	10,000	3,000	3,000	0	2,000	0
GAF Required (2002-2006 Average Weight)	0	0	0	0	29,000	10,000	3,000	3,000	0	2,000	0

Source: NEI Estimates, 2008.

Provision A-3 creates GAF leasing limits for LEP holders. Up to 400 GAF could be assigned to each LEP endorsed for six or fewer clients. The provision contains a sub-option that would allow vessels with an endorsement for more than six passengers to lease 600 GAF. Table 66 and Table 67 classify vessels owned by potential LEP holders by passenger endorsement and 2006 harvest levels (NPFMC 2007c). These tables show that:

- Vessels with endorsements for more than six passengers are more common in Area 3A than they are in Area 2C. These vessels represented 3.8 percent of the qualifying fleet in Area 2C and 21.1 percent of the qualifying fleet in Area 3A.
- Vessels harvesting fewer than 400 fish per year represented 68 percent of the fleet in Area 2C and 52.6 percent of the fleet in Area 3A. These harvest levels are more common in vessels that are

endorsed for fewer passengers (i.e., 91.7 percent and 74.4 percent of the six-or-fewer passenger fleet in Area 2C and Area 3A, respectively.)

- Vessels with passenger endorsements for more than six passengers harvest approximately 42 percent more fish, on average, in Area 2C, and 243 percent more, on average, than smaller vessels in Area 3A. Vessels harvesting more than 1,000 fish per year occur primarily in Area 3A. None of these larger capacity vessels harvested more than 1,600 halibut per year.
- GAF would be used to provide charter anglers with harvest opportunities equivalent to those for non-charter anglers. Many of the management options considered in Element 3 affect the second fish in an angler's daily bag limit through size restrictions or outright harvest bans. Thus, an LEP holder's demand for GAF, in part, would be driven by the success their customers have at harvesting a second fish. On average, second fish were 39.7 percent of overall harvest in Area 2C and 47.1 percent of overall harvest in Area 3A in 2006. So, in order to ensure the same level of customer success in 2007, that a customer had in 2006, Area 2C LEP holders (on average) would have needed to lease GAF equal to 39.7 percent of their 2006 harvest, in order to free their clients

**Table 66 Distribution of vessels by area and endorsement level (number).**

2006 Halibut Harvest	Area 2C		Area 3A	
	Passenger Endorsement of 6 or Fewer	Passenger Endorsement of More than 6	Passenger Endorsement of 6 or Fewer	Passenger Endorsement of More than 6
No Data	4	0	2	0
No Harvest in 2006	177	4	143	14
Fewer than 200	284	13	150	19
200 to 399	154	6	71	15
400 to 599	53	3	47	14
600 to 799	3	0	36	16
800 to 999	0	0	21	10
1,000 to 1,199	0	1	10	8
1,200 to 1,399	0	0	10	9
1,400 to 1,599	0	0	2	4
1,600 to 1,799	0	0	0	7
1,800 to 1,999	0	0	0	6
2,000 to 5,000	0	0	0	7
5,000 to 10,000	0	0	0	3
<b>Grand Total</b>	<b>675</b>	<b>27</b>	<b>492</b>	<b>132</b>

**Table 67** Distribution of vessels by area and endorsement level (percentage).

	Area 2C		Area 3A	
	Passenger Endorsement of 6 or Fewer (%)	Passenger Endorsement More than 6 (%)	Passenger Endorsement of 6 or Fewer (%)	Passenger Endorsement More than 6 (%)
2006 Halibut Harvest				
No Data	0.6	0.0	0.4	0.0
No Harvest in 2006	26.2	14.8	29.1	10.6
Fewer than 200	42.1	48.1	30.5	14.4
200 to 399	22.8	22.2	14.4	11.4
400 to 599	7.9	11.1	9.6	10.6
600 to 799	0.4	0.0	7.3	12.1
800 to 999	0.0	0.0	4.3	7.6
1,000 to 1,199	0.0	3.7	2.0	6.1
1,200 to 1,399	0.0	0.0	2.0	6.8
1,400 to 1,599	0.0	0.0	0.4	3.0
1,600 to 1,799	0.0	0.0	0.0	5.3
1,800 to 1,999	0.0	0.0	0.0	4.5
2,000 to 5,000	0.0	0.0	0.0	5.3
5,000 to 10,000	0.0	0.0	0.0	2.3
Average 2006 Harvest (No. Halibut)	138	197	257	882
Average GAF Needed to Cover 2 <sup>nd</sup> Fish Limitations	54	78	121	415

from length limitations. On average, this would have meant leasing between 54 and 78 GAF depending on the client endorsement level. In Area 3A, smaller vessels would need on average 121 GAF to mitigate second fish management measures, while larger endorsement vessels would need 415 GAF on average. Thus, the larger GAF-leasing levels (600 GAF) under the preferred alternative would work better for larger vessels in Area 3A.

Based on 2006 data, a 200-GAF leasing allowance would provide harvest opportunities equivalent to 2006 conditions to vessels harvesting 500 halibut or fewer in Area 2C, or 425 halibut or fewer in Area 3A. The 400-GAF leasing allowance per vessel, the preferred alternative, would allow vessels that had harvested 1,000 halibut or fewer (Area 2C), or 850 halibut or fewer (Area 3A) to offer historical harvest opportunities. The 600-GAF level, which was only considered for vessels with passenger endorsements higher than six anglers, would allow vessels that had harvested 1,500 halibut or fewer (Area 2C) or 1,275 halibut or fewer (Area 3A) to offer historical harvest opportunities (see Table 68).

**Table 68** Harvest levels under which proposed GAF leasing amounts would no longer be adequate to cover historical usage.

Leasing Allowance	Equivalent 2006 Harvest Level			
	Area 2C		Area 3A	
	Passenger Endorsement of 6 or Fewer	Passenger Endorsement More than 6	Passenger Endorsement of 6 or Fewer	Passenger Endorsement More than 6
200-GAF	500	500	425	425
400-GAF	1000*	1000	850*	850
600-GAF	N/A	1500*	N/A	1275*

\* Preferred alternative



The data show that different leasing allowances would be needed in Areas 2C and 3A to maintain the same level of access to historical harvest opportunities. In Area 2C, only one vessel harvested more than 1,000 fish in 2006 (1,028). Thus, the 400-GAF leasing limit would provide a near-universal guarantee of historical (2006) harvesting opportunities in Area 2C, except for this one vessel. However, there are vessels in Area 3A in both endorsement levels that would be unable to provide their historical harvest opportunities at the 600-GAF leasing limits. Approximately 7.5 percent of the fleet in the smaller endorsement level and 38.6 percent of the fleet in the larger endorsement level would be unable to provide their historical opportunities if a 400-GAF limit were imposed (See Table 69). At the 600-GAF limit selected by the Council, 26.5 percent of the vessels in the larger endorsement class would be unable to offer their historical fishing opportunities. While Area 3A does not exhibit the same GHL coverage as found in Area 2C, and there are currently no differences in the harvest regulations for charter and unguided anglers, the Council could consider higher GAF-leasing limits in Area 3A to provide equivalent preservation of historical fishing opportunities.

**Table 69** Portion of fleet likely to be unable to provide historical opportunities.

Leasing Allowance	Equivalent 2006 Harvest Level			
	Area 2C		Area 3A	
	Passenger Endorsement of 6 or Fewer (%)	Passenger Endorsement More than 6 (%)	Passenger Endorsement of 6 or Fewer (%)	Passenger Endorsement More than 6 (%)
200-GAF	3.4	11.1	20.7	44.2
400-GAF	0.0*	3.7	7.5*	38.6
600-GAF	N/A	0.0*	N/A	26.5*

\* Preferred alternative

Limits are set on the number of halibut that a charter operator may assign to an LEP. Charter LEP holders are limited to assigning 400 or fewer GAF to each LEP that is endorsed for 6 or fewer clients. If an LEP is endorsed for more than 6 clients, a maximum of 600 GAF may be assigned for used with that permit. Linking the limits to a total number of GAF, instead of a number of IFQ pounds, eliminates fluctuations in the limit when the average halibut weight changes. It also provides stability, because the charter LEP holders know in advance the maximum number of GAF that may be assigned to an LEP.

Persons that hold more than one LEP will not be allowed to stack GAF on an LEP. The limits are associated with individual LEPs. Therefore, if a charter operator reaches the GAF limit on an LEP, he or she would not be allowed to harvest any additional GAF using that LEP. They could harvest GAF using any of their other LEPs that have not reached their limit. In practice, this means that clients that want to take advantage of the GAF provisions would probably be booked for trips on vessels using LEPs that have not reached their limit. Clients that did not want to use GAF fish could be booked on vessels using LEPs that have reached their limit.

Recall that LEPs are allowed to be stacked on a vessel to increase the number of anglers a vessel may carry, subject to other applicable state and federal regulations. Therefore, more than one LEP could be onboard a vessel at any one time. If an LEP is on the vessel that has room under the GAF cap, and the harvest is assigned to that LEP in the logbook, the charter operator could allow clients to retain GAF, even if another LEP on the vessel has reached its cap.

#### Provision B – Landing and Use Restrictions

*LEP holders harvesting GAF while participating in the charter halibut fishery are exempt from landing and use restrictions associated with commercial IFQ fishery, but subject to the landing and use provisions detailed under the provisions listed below.*

The following lists some of the landing and use provisions from which LEP holders would be exempted under Provision B. These provisions are generally described in <http://www.alaskafisheries.noaa.gov/ram/rtf95.pdf> and are more specifically detailed in 50 CFR 300.60 through 300.65:

- Block restrictions;
- Use and vessel harvest caps;
- Vessel length categories;
- Owner-on-board restrictions;
- Landing and reporting requirements;
- Prior notice of landings, and
- Vessel clearance requirements.

The provisions discussed below examine landing and use restrictions that would apply to LEP holders in place of the commercial landing and use provisions listed above.

#### Provision C – Issuance of Guided Angler Fish

*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).*

Provision C addresses how NMFS RAM Program would convert IFQ to GAF. For example, if the average weight of a charter halibut in Area 3A in 2006 was 20.0 lb, then an LEP holder would have to lease 20.0 lb of IFQ for each GAF they want the opportunity to harvest in the 2007 season. The same average weight should be used to convert unused GAF back to IFQ at the end of the season. See section 3.3 for a full description of this conversion.

Average weights for each regulatory area are weighted means, obtained by sampling the sport harvest at ports throughout Alaska and weighting the sample averages by the harvest corresponding with each port. Currently, ADF&G does not obtain a final estimate of the harvest corresponding with each port until September of the year following harvest, near the end of the fishing season. For example, the final estimate of average weight for 2007 would not be available until September 2008, after most of the charter fishing season. Alternately, NMFS could make the conversion using the preliminary estimates of average weights for the previous year, which are weighted by harvest projections rather than final harvest estimates. Occasionally, other errors in the weight data are corrected between the preliminary and final stage, but these changes are minor. Preliminary and final estimates of average weight have varied by less than 1 lb since 2001, with an average difference in 0.5 lb in Area 2C and 0.2 lb in Area 3A. If this program is implemented, ADF&G plans to continue to estimate average weight from length data collected from the charter harvest (see section 2.5.7.5.1).

If there is a change in the average weight from year to year, it would become apparent during the following year, that the charter operator paid either too much or too little for GAF. Since the conversion is a linear function of the average weight, the percentage error in the amount of IFQ converted would equal the percentage difference in the average weights from year to year. These differences in weight converted (but, not necessarily price paid) likely would cancel out only for charter LEP holders and IFQ holders who convert relatively consistent quantities on a regular basis, over an extended number of years.

The delay in estimation of average weight may also affect catch accounting. It is assumed that GAF harvest would be tallied as commercial catch, since it is converted from IFQs. Because the conversion of IFQ to GAF would likely be based on preliminary estimates of average weight from the previous year, the accurate accounting of GAF removals could not be obtained until the final estimates of harvest are available the following year. The degree to which this accounting error becomes an issue depends on the

magnitude of GAF conversion. If the amount of IFQ converted to GAF is a small proportion of the commercial catch limit, the error may not be worth addressing.

Perhaps a more important consideration is whether the average weight of the common pool charter harvest should be used to convert IFQ to GAF, or whether the average weight of GAF should be used. The average weight of GAF may be higher than the average weight of all charter caught halibut under certain conditions. For example, if the GAF program had been in place under the 2007 regulations for Area 2C, the GAF could have been used to exempt harvests from the 32 inch maximum size limit on the second fish in an angler's daily bag limit. In cases where the angler and the LEP holder decided to use a GAF, many of the fish could have been larger than 32 inches. If the average GAF is the same size as the average first fish, then the average GAF would be larger than the average fish for the entire fishery, because calculations for the latter would include fish that are constrained by the maximum size limit. Even in the absence of a size limit, GAF could be larger than common pool fish, if charter operations that use GAF tend to harvest larger fish than charters relying on common pool fish, as a result of how or where they fish. In addition, the average weight of GAF would be dependent on the distribution of harvest among subareas of Area 2C or Area 3A. Average weight currently varies quite a bit from port to port. If a high proportion of GAF are harvested from areas with larger fish, the end result would be that the average weight for GAF would be greater than the average weight for non-GAF.

It is also possible, under certain conditions, that average weight of GAF would not exceed that of the common pool. For example, if the charter fishery is restricted to a one-fish bag limit, then common pool fish may have a higher average weight than GAF, due to high-grading. Under a one-fish limit, some anglers would try to harvest the largest fish possible.

Given the uncertainty regarding differences in the size of GAF and common pool fish, it would be prudent to obtain size data from both groups of fish, especially in the early years of the program.

#### Provision D – Subleasing of Guided Anger Fish (Preferred Alternative)

*Subleasing of GAF would be prohibited.*

Provision D is designed to limit the incentives for LEP holders to lease more IFQ for use as GAF than necessary. However, the leasing cost itself is likely to provide an incentive not to lease more IFQ than reasonably can be expected to be used. This provision would prevent an LEP holder from leasing to another LEP holder, if the first lease holder was unable to fish the GAF (e.g., unavoidable circumstances, including long term illness, injury, boat loss). However, LEP holders may be quick to recognize this limitation and adapt their lease agreements to include a reversion clause, in the event that the LEP holder is unable to fish the GAF. Such reversion clauses would be a private contractual decision between the parties. The automatic transfer of GAF to IFQ on November 1, could make negotiating a price for returned halibut more difficult for charter LEP holders. Commercial IFQ holders will know that any unused GAF would automatically revert to IFQ on November 1 with or without compensation to the charter operator. If charter LEP holders are not certain they will use all their GAF and they are unable to negotiate a "fair" return price in the lease agreement, it may limit angler's access to GAF.

#### Provision E – Conversion of GAF back to IFQ

*Conversion of GAF back to commercial sector*

- 1. GAF holders may request NMFS convert unused GAF into IFQ pounds for harvest by the owner of the Quota Share in compliance with commercial fishing regulations.*
- 2. Unused GAF may revert back to pounds of IFQ and be subject to the underage provisions applicable to their underlying commercial QS*

*Option a: automatically on October 1 of each year; or*

*Option b: upon the request of the GAF holder, if such request is made to NMFS in writing prior to October 1 of each year.*

3. (Preferred Alternative) *Unused GAF may revert back to pounds of IFQ and be subject to the underage provisions applicable to their underlying commercial QS either automatically on November 1 of each year or upon the request of the GAF holder, if such request is made to NMFS in writing prior to November 1 of each year.*

Component 1 would allow dual-holders of both IFQs and LEPs to convert GAF back into IFQ at any time during the commercial IFQ season. For example, at the beginning of the charter fishing season, a dual holder of commercial QS and charter LEP may request that NMFS convert IFQ equivalent to 200 GAF. In September, the dual holder realizes that he or she is only going to use 150 of the 200 GAF and asks NMFS to convert the remaining 50 GAF back into IFQ, using the same conversion ratios used during the original conversion. The holder is now free to commercially fish that IFQ. The intent of this component is to allow the dual holder to convert his or her own IFQ into GAF and retain the flexibility to convert those GAF back into IFQ.

Component 2 would allow unused GAF to revert back to IFQ at the end of the commercial season, and to be subject to the underage provisions applicable to their underlying commercial QS. For example, an LEP holder not qualified to hold QS, leases IFQ and requests that NMFS convert it into GAF, which results in 200 GAF. By the end of the season, the LEP holder has used only 150 GAF. The unused 50 GAF *automatically* reverts to IFQ in the account from which it was leased.

Under Component 2, the Council's motion establishes two non-mutually exclusive options for converting GAF back to IFQ. Option A establishes an automatic reversion date for unused GAF, of October 1, while Option B allows for reversion prior to October 1, if the GAF holder makes the request to RAM. These options address RAM suggestions received for the April 2008 draft of this document. The staff suggested that reversion transfers could be conducted automatically, or only upon request. A full description of the re-conversion mechanism is contained in section 3.3. The primary reason for establishing an automatic reversion date was to avoid a conflict between GAF to IFQ reversions and the end-of-season balancing the accounts for commercial halibut, sablefish, and crab IFQ and preparation of IFQ permits for the following seasons. The October 1 date is the earliest date that avoids the conflicts RAM staff is concerned about AND minimizes effects on the charter fleet as a whole. ADF&G data for 2006 indicate that less than 1 percent of charter halibut harvest occurred after September 30, in either Area 2C or Area 3A. Hence, an automatic reconversion date for unused GAF of October 1, would not significantly affect charter business operations in aggregate. However, individual businesses may be affected by any automatic reconversion date. At the same time, the automatic date makes the program easier for RAM staff to manage. It would also provide six weeks for those (reverted) commercial IFQs to be used in the commercial sector.

Under Component 3 (preferred alternative), the Council selected its preference for converting GAF back to the commercial sector as IFQ. That alternative states that all unused GAF will revert to the QS holder that leased the GAF to the charter operator, on a mandatory return date. GAF may be transferred back to the person they leased the IFQ from, prior to the mandatory return date, if the GAF holders make the transfer request in writing to RAM. The Council recommended a mandatory return date of November 1 in its October 2008 motion. However, the Council revised this recommendation in October 2010, to specify a mandatory return date of 15 days prior to the close of the commercial halibut fishing season. The Council recommended this change because the IPHC sets the fishery season dates each year, and specifying a mandatory return date of 15 days prior to the end of the commercial fishing season would better accommodate any season closure date the IPHC recommends rather than an annual November 15 closure date. This approach also provides IFQ holders with an opportunity to harvest returned GAF before the commercial fishing season closes for the year.

If an LEP holder has GAF they do not need, they may return the IFQ to the commercial IFQ holder from whom it was leased. The pounds of IFQ returned would be calculated by multiplying the number of GAF by the average halibut weight used when the GAF were created. The commercial IFQ holder would then have the option of leasing the IFQ to another LEP holder or harvesting the IFQ himself or herself.

#### Provision F – Limitations on Using Guided Angler Fish to Expand the Daily Bag Limit

*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.*

Provision F is intended to allow charter LEP holders to use GAF to provide charter anglers with opportunities that are equivalent to (but not more than) those provided to non-guided recreational anglers. Until implementation of a maximum size limit of 32 inches on the second fish in the charter angler's daily bag by NMFS in June 2007, charter and unguided anglers were subject to the same set of harvest regulations in both IPHC areas. Subsequently, a one-halibut of maximum size daily limit was imposed on charter anglers in Area 2C, while unguided users are permitted two halibut per day.

#### Provision G – Enforcement and Sampling Access

*Charter operators landing GAF on private property (e.g., lodges) and motherships would be required to allow agency samplers and enforcement personnel access to the point of landing.*

Provision G requires that charter LEP holders landing GAF on private property (e.g., lodges) and charter trip support vessels (e.g., floating lodge facilities) allow ADF&G samplers and enforcement personnel access to the point of landing. The provision is included in this program, because the conversion of IFQ to GAF would be based on average weight of halibut landed in each region's charter halibut fishery according to ADF&G's dockside sampling program. Current sampling programs collect size data from the recreational fishery, mainly at public access sites, with some exceptions in Area 2C. It is unknown whether the current access sites would provide adequate or representative samples of GAF. If remote lodges tend to use the GAF provisions more than other charter operations, estimates of average weight of GAF may be biased. Management agencies should have the ability to access private sites of halibut landings for purposes of data collection, if it is determined that this sampling is feasible and cost-effective.

Both NMFS staff and ADF&G staff have indicated that tracking the use of GAF is very important for the leasing program to function properly. Lodges have been discussed as potential significant users of GAF. During Council discussions, several people indicated they felt lodge owners were financially better situated to lease GAF. They have the opportunity to spread the cost of the GAF over the total amount of fees charged for the lodge stay. Also, persons staying at these lodges often are buying a "high-end" fishing experience and may be more willing to pay for a GAF, than persons that book only a charter or are taking a lower cost vacation.

Persons that do not wish to have ADF&G samplers/enforcement personnel on their property have the option to not allow GAF to be landed on their property. The Council's motion is specific to GAF, and persons that do not allow GAF to be landed on their property are not subject to allowing State and federal personnel to have additional access to their property. However, if at any time private property owners allow GAF to be landed on their property, they will be subject the new requirements.

#### Provision H – Ban on Same Day Commercial and Charter Operations (Preferred Alternative)

*Commercial and charter fishing may not be conducted from the same vessel, on the same day.*

Provision H would prevent individuals who hold both an LEP and commercial IFQ from fishing for commercial and charter halibut on a vessel during the same day. The provision exists to facilitate enforcement, as different regulations would apply to charter-caught and commercially-caught halibut and

preceding provisions exempt GAF from the landing and use provisions associated with commercial IFQ. This provision would not prevent dual-owners from conducting charter operations and commercial operations on separate boats on the same day. Approximately 2 percent of halibut IFQ holders would likely qualify for an LEP, and approximately 8 percent to 10 percent of preliminary LEP qualifiers held commercial QS in 2006.

To enforce this provision, logbooks indicate the date of a charter trip and the logbook must be completed before the halibut are offloaded. Referring to the logbook indicates whether that vessel was used on a charter trip that day. If the logbook is properly and accurately completed and indicates that no charter activity occurred on the vessel, enforcement would treat the harvest as commercial or unguided sport. The Council felt it was important to help enforcement officials and samplers determine how to classify harvest and allowing both types of trips on a vessel in the same day could create too much uncertainty.

## 2.6 Analysis of Preferred Alternative

The preferred alternative sets a schedule of initial allocations between the halibut charter sector and commercial setline sector at levels of combined charter and commercial catch limits for Area 2C and Area 3A. These allocations act as triggers that automatically define charter harvest regulations for the upcoming fishing year. Regulations imposed at each trigger level are expected to keep the charter angler's harvest within an acceptable range of the allocation. ADF&G will use projections of charter angler's harvest to determine the percentage of the combined catch limit that is anticipated to be harvested by charter clients in those areas in the upcoming year. If the projected harvest falls within the acceptable range, the management measures for that trigger point would be implemented. If the charter harvest is projected to exceed the acceptable percentage, stricter charter regulations would be imposed to reduce the percentage of halibut harvested by the charter sector. If the charter sector is projected to harvest a percentage of the combined catch limit that is lower than the range, charter client harvest regulations may be relaxed to allow the sector to harvest more halibut. If the actual charter harvest varies from the projected amount, ADF&G may use that information in future years to modify its harvest estimation methods.

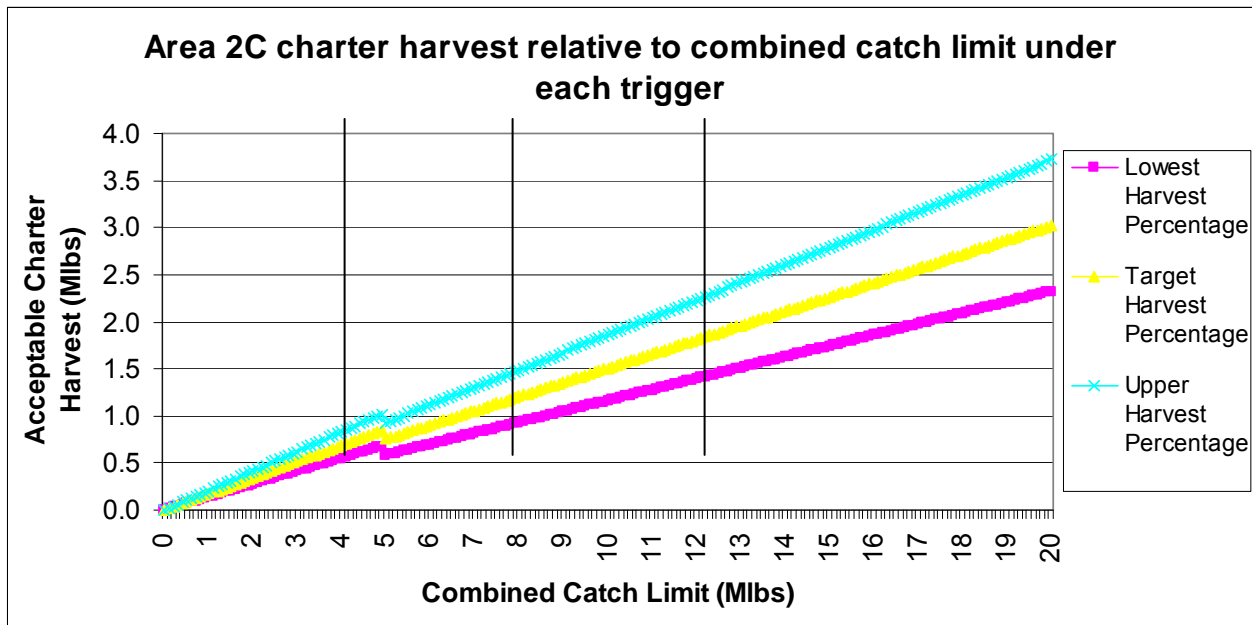
The preferred alternative also establishes a market based structure for a constrained-optimum allocation to occur under changing economic conditions in the future. The preferred alternative would allow the commercial sector to lease (annual) IFQ to the charter sector in Areas 2C and 3A. This provision meets the Council's objectives for the program, and the SSC and the academic literature have indicated that a market based system of inter sector trading is an efficient mechanism to create an optimal allocation, as economic conditions change. If this provision were not included in the preferred alternative, it was anticipated that the charter or commercial industry would be more likely to petition the Council to change the allocation in the future, because representatives of the charter sector indicated that the initial allocations, particularly in Area 2C, were insufficient to meet angler demand. The Council included inter sector trading as a feature of its preferred alternative as the mechanism by which the charter sector could increase its allocation and compensate the commercial sector for the latter's decreased harvests, at an individual level.

### Allocation Trigger Points

**Area 2C** The Council selected four trigger points in Area 2C to determine charter sector harvest regulations. The lowest trigger point (Trigger 1) will be selected when the combined catch limit, set by the IPHC, is less than 5 Mlb. Trigger 2 is selected when the combined catch limit is 5 Mlb to 9 Mlb. Trigger 3 is implemented when the combined catch limit is 9 Mlb to 14 Mlb. Finally, Trigger 4 is implemented when the combined catch limit is 14 Mlb or greater. The charter sector allocation under the lowest level of abundance (Trigger 1) would be 17.3 percent, while the allocation would drop to 15.1 percent at higher levels of abundance (Triggers 2 – 4).

The strictest harvest regulations (smallest target harvest) for the charter sector would occur under Trigger 1. When the combined catch limit is less than 5 Mlb, the charter sector would be regulated with the intent

that 17.3 percent of the available halibut would be harvested by charter anglers. The remaining portion of the combined catch limit (82.7 percent) would be allocated to the commercial setline sector. Charter angler's harvest under Trigger 1 would fall within the 0 lb to 864,999 lb range, if they stay within their target harvest (initial allocation). Charter anglers would have a one halibut daily bag limit. That halibut may or may not have a specific size limit. The size limit would depend on ADF&G's projection of the charter sector's harvest with and without a size limit. If needed, the size limit imposed would be set at a length that is projected to result in the charter anglers harvesting 17.3 percent of the combined catch limit.



**Figure 19** Area 2C charter harvest relative to combined catch limit under each trigger.

The Council acknowledged the difficulty in managing the charter harvest to a precise amount; therefore, it identified a harvest percentage range that it considers to be an acceptable margin of error. For Trigger 1, the range is 13.8 percent to 20.8 percent of the combined catch limit. Because the charter sector is assumed to harvest 17.3 percent of the combined catch limit, any variation in its harvest percentage would result in the combined catch limit either being over or under harvested. Allowing for some error is not expected to adversely impact halibut biomass. Some years, the charter sector would be expected to exceed its target removals. Other years, the charter sector would be expected to harvest less than its target allocation. The annual overages and underages in harvest that are expected to occur should balance out so the average annual harvest is 17.3 percent. However, the Council intends that if the charter harvest percentage is projected to be less than the target range, charter angler restrictions would be relaxed, that year, to the regulations defined under Trigger 2. If they are projected to allow charter anglers to harvest too much halibut, the regulations would be required to modify the size limit for the one-fish bag limit, to decrease projected removals.

Because the combined catch limit varies from 0 lb to 5 Mlb under Trigger 1 (see above), and the acceptable harvest percentage ranges from 13.8 percent to 20.8 percent, the range of harvest under Trigger 1 can vary by over 1 Mlb. When the largest acceptable percentage of harvest by the charter sector is combined with the largest possible catch limit, the charter sector could harvest 1,040,000 lb of halibut. If the combined catch limit was 0 lb, of course, neither the charter sector nor the commercial setline

fishery would be issued an allocation. Both fisheries would be prohibited from harvesting halibut that year, due to conservation concerns over the halibut resource.

If the charter sector is projected by ADF&G to exceed 20.8 percent of the combined catch limit, then a maximum size limit would be imposed on the one fish. The objective is to limit harvest between 13.8 percent and 20.8 percent of the combined catch limit. The IPHC would recommend the appropriate size limit based on the catch sharing plan regulations. Whenever the charter harvest is projected to be less than 13.8 percent of the combined catch limit, then the catch sharing plan would determine if Trigger 2 harvest regulations would allow the sector's harvest to increase to the acceptable range.

Small combined catch limits also raise the question of whether there is a point at which the allocation is too small to open the fishery. (Hare and Clark 2008) describes how the current IPHC harvest policy decreases the 20 percent target exploitation (in Areas 2C and 3A) when the spawning biomass is between the threshold reference point (the point at which the harvest rate begins to be set lower than the target harvest rate) and the limit reference point (point at which fishing ceases). This strategy decreases harvest rates in order to slow the decline of the female spawning biomass, but still allow a fishery. However, the IPHC is considering revisions to its harvest strategy.

Management agencies that oversee the commercial setline and charter fisheries would need to determine if the fisheries should be opened when a small combined catch limit is calculated using the IPHC harvest policy in place at the time. In the charter sector, the Council recommended that the catch sharing plan use conservative harvest restrictions on the size of the one halibut allowed to be retained, to keep the charter sector within its allocation.

In the commercial fishery, NMFS would decrease the IFQ to QS ratio as a function of its percentage of the combined catch limit. Each QS holder would then receive a smaller allocation. Individual IFQ holders are responsible for keeping their harvests within their allocations. Because each person is responsible for staying within their allocation, it is possible for NMFS to manage small allocations. To make harvesting smaller allocations of halibut more economical, IFQ holders may consolidate their catch on fewer vessels. This is already being done by some IFQ holders. Reducing costs allows IFQ holders to either increase their profits or decrease their costs, without acquiring additional IFQ.

Charter LEP holders may find it more difficult to market trips with stricter harvest restrictions. Charter operators have testified before the Council about the negative impacts the one-fish bag limit had on client bookings in Area 2C. They have often stated that the specter of a one-fish daily bag limit caused clients to cancel trips. Some clients, reportedly, rebooked their trip in Area 3A, where a two-fish bag limit remains in place. Decreasing the likelihood that clients would be able to harvest even one halibut of any size is anticipated to cause further demand reductions in Area 2C.

Council analyses (NPFMC 2007a, b, and c) have discussed the impacts of bag limits and size limits on halibut harvests. Those analyses provided estimates of harvest changes when different regulatory restrictions are implemented. Making those estimates would be even more difficult in the near term, as a result of changing economic conditions. King (2009) provided a discussion paper to the SSC that describes a methodology to determine which management measures would result in specific levels of harvest. This analysis does not attempt to estimate the size limits that would need to be implemented at specific combined catch limits. That calculation would be left to the IPHC to determine on an annual basis, using the best information available from ADF&G charter harvest estimates. The IPHC would recommend the charter harvest restrictions that would be implemented under the CSP each year. NMFS would publish the CSP charter harvest restrictions, along with other IPHC annual management measures in the *Federal Register* upon approval by the Secretary of the State with the concurrence of the Secretary of Commerce.

It is not possible to state a precise impact of Trigger 1, because of the wide range of charter harvests that could occur and the lack of information on future size limits that may be imposed on the one halibut that



anglers would be allowed to retain. Charter sector members have indicated that a one-fish bag limit would have a substantial negative impact on their businesses. At the firm level, if too many clients move to another area to fish, or decide not to fish altogether, it could make the firm unprofitable. If the firm is unable to survive the decrease in client demand, it may have to diversify its operation or exit the halibut charter industry.

Trigger 2 would be selected when the combined catch limit is set between 5 Mlb and 9 Mlb. Under this trigger, the charter sector's target harvest would be 15.1 percent of the combined catch limit. The percentage of the combined catch limit is a 2.2 percent decrease from the 17.3 percent target under Trigger 1. The remaining 84.9 percent of the combined catch limit would be allocated to the commercial setline sector.

While the trigger point does cause a substantial shift in the allocation (2.2 percent of the total), the larger target harvest percentage under Trigger 1 allows the charter sector to have a larger target harvest allocation when the combined catch limit is at lower levels. Some members of the charter sector have argued that a fixed allocation is needed to provide stability for their sector. While the larger allocation at lower levels of the combined catch limit does not guarantee a sufficient amount of halibut to meet the charter sector client's demand for halibut trips, it does ensure that more halibut is allotted to the charter sector when combined catch limits are low. The change in allocations that would occur at the break-point of Trigger 1 and Trigger 2 could place increased public and political pressures on the IPHC when it is setting the combined catch limit, if it is close to the 5.0 Mlb threshold.

The acceptable range of the combined catch limit for the charter sector to harvest is 11.6 percent to 18.6 percent. This percentage range and the Trigger 2 range for the combined catch limit results in a charter sector harvest range between 580,000 lb and 1.674 Mlb, depending on the combined catch limit. The difference between the largest and smallest allowable harvest is over 1 Mlb. That harvest range is larger than the current 788,000 lb GHL.

Charter angler harvest regulations under Trigger 2 would include a one halibut daily harvest limit. As under Trigger 1, the IPHC would determine whether a size limit is necessary and what the appropriate size limit would be to achieve the desired level of harvest. The stricter the size limit, the greater impact it is projected to have on client demand for charter trips. When fewer charter trips are taken, fewer halibut are projected to be harvested.

The total amount of charter halibut that could be harvested, while still remaining within its acceptable range, is between 0.58 Mlb and 1.67 Mlb. That range is determined by the size of the combined catch limit and the percentage of the total that the charter clients harvest. If the charter sector harvests right at the 15.4 percent target, variation in the combined catch limit would result in the charter sector harvesting between 0.76 Mlb and 1.40 Mlb.

If the charter sector is not projected to harvest enough halibut to reach 11.6 percent of the combined catch limit under Trigger 2, the harvest regulations defined under Trigger 3 could be implemented. Trigger 3 harvest regulations would include a two-fish daily bag limit, with one of the fish being less than 32 inches in head-on length. If the charter harvest was projected to be greater than 18.6 percent, a size limit would be imposed on the one fish clients may harvest.

Trigger 3 would be selected when the combined catch limit ranges between 9 Mlb and 14 Mlb. The charter sector's target harvest would be 15.1 percent of the combined catch limit set by the IPHC. This target harvest and defined range for the combined catch limit means the charter sector would harvest between 1.40 Mlb and 2.11 Mlb of halibut. Because of the uncertainty of projecting charter harvest in a given year, the Council has determined that a range of 11.6 percent to 18.6 percent is an acceptable margin of error. When the upper and lower levels of combined catch limit and charter harvest percentages are considered, the potential range of acceptable charter harvest is between 1.04 Mlb and 2.60 Mlb.

Charter angler’s daily bag limit would be two halibut under Trigger 3. One of the halibut must be less than 32 inches in head-on length. The order in which the halibut are harvested is not important. However, once an angler has harvested a halibut 32 inches or more in head-on length, they must carefully release any halibut they catch that is 32 inches or greater. The angler may continue fishing in order to harvest a halibut that is less than 32 inches, if they have not harvested one that size. It is also legal to harvest two halibut that are less than 32 inches as the daily bag limit.

Trigger 4 regulations are implemented when the combined catch limit is 14 Mlb or more. At a 14 Mlb combined catch limit the charter sector’s target harvest (15.1 percent) is 2.11 Mlb. The acceptable harvest (11.6 percent to 18.6 percent) is 1.62 Mlb or more, depending on the combined catch limit. It is possible that client demand would not be sufficient to harvest the charter allocation if high combined catch limits are set. If a level of combined catch limit is set by the IPHC such that the charter sector cannot harvest its 15.1 percent allocation, the halibut in excess of the charter and commercial harvest would not be harvested and would accrue to the halibut biomass. It is not expected that the Area 2C combined catch limit would reach a level that would exceed the amount the charter sector could harvest, given its allotted percentage. Under no circumstances would charter anglers be allowed to harvest a bag limit of more than two halibut of any size.

Should ADF&G project that the charter sector would harvest more than 18.6 percent of the combined catch limit under the two-fish bag limit, Trigger 3 regulations could be imposed that would require one of the halibut to be less than 32 inches in length.

**Projections:** The projections of halibut CEY used to produce charter allocations in this analysis were prepared for the Council in 2008. Actual CEYs from 2008 through 2011 in both Area 2C and Area 3A were lower than the projections prepared for this analysis. As a result, the charter halibut allocations calculated from projected CEYs in this analysis for the preferred alternative are likely higher than the charter halibut allocations that would result from updated projections. However, the description of the effects of the options on charter allocations and revenue estimates provided in this analysis would also be applicable to lower charter sector allocations. An analysis of the effects of updated CEY projections under the preferred alternative is presented below in the “New Information Since Final Action” section.

**Initially Projected 2C Trigger Levels:** Projections of the combined catch limit through 2015 for Area 2C, indicated that the charter sector would be operating under Trigger 2, each year. Table 70 shows the projected combined catch limit for the years 2010 through 2015 that were provided by the IPHC. The combined catch limit projections ranged between 6.76 Mlb and 8.60 Mlb. Trigger 2 is implemented when the Area 2C combined catch limit is over 5 Mlb, but less than 9 Mlb, and each projected combined catch limit falls within that range. Under Trigger 2, the charter angler daily bag limit is set at one fish.

**Table 70** Projected Trigger in Area 2C, 2010–2015.

Year	Combined Catch Limit (Mlb)	Target Charter Harvest (Mlb)	Projected Trigger	Bag Limit	Size Limit	Commercial Allocation (Mlb)
2010	6.76	1.02	2	1	?	5.74
2011	7.06	1.07	2	1	?	5.99
2012	7.51	1.13	2	1	?	6.38
2013	7.98	1.20	2	1	?	6.77
2014	8.36	1.26	2	1	?	7.10
2015	8.60	1.30	2	1	?	7.30

Source: IPHC staff provided combined catch limit projections for the years 2008 through 2015. Only the years 2010 through 2015 are included in this table. The size limit would be determined as described in King (2009).

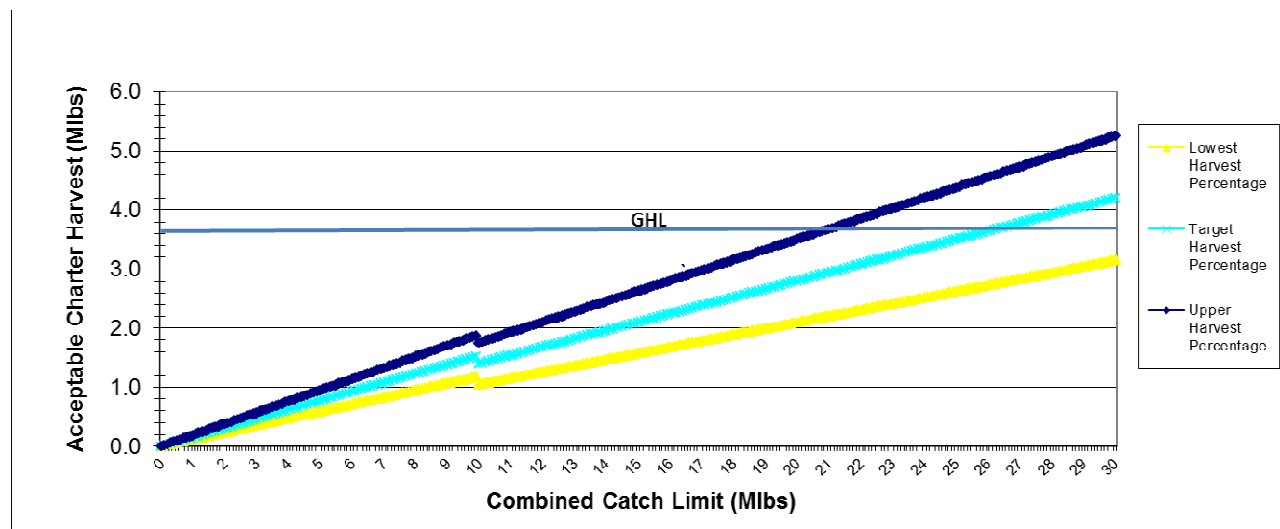
It is not possible to project if there would be a size limit, or what it would be, each year. The size limit would be implemented only if ADF&G projects the charter harvest would be equal to or exceed 18.6 percent of the combined catch limit. If projected charter harvest is greater than or equal to 18.6 percent of the combined catch limit, the IPHC would determine what size limit would be needed to reduce charter harvest to 15.1 percent of the combined catch limit.

The commercial setline allocation is projected to be 5.74 Mlb in 2010 and annually increase until it reaches 7.30 Mlb in 2015. These allocations are well below the commercial catch limits of over 8.5 Mlb from 2001 through 2003 and in 2007; the commercial allocations were only about half of those that were over 10.5 Mlb from 2004 through 2006. The decrease in the commercial setline limit, from 2006 to 2008, means that the revenue IFQ holders derive from their harvest declined, because the change in exvessel price (from \$3.75 in 2006 to \$4.38 in 2008) did not offset the decrease in production.

**Area 3A** The Council identified four trigger points for Area 3A. As in Area 2C, the trigger points are based on the combined catch limit that would be set by the IPHC. Trigger 1 is implemented when the combined catch limit is set at less than 10 Mlb. Trigger 2 is implemented when the combined catch limit is between 10 Mlb and 20 Mlb. Trigger 3 takes affect when the combined catch limit is between 20 Mlb and 27 Mlb. Trigger 4 regulations are implemented when the combined catch limit is 27 Mlb or more. The charter sector allocation under the lowest level of abundance (Trigger 1) would be 15.4 percent, while the allocation would drop to 14.0 percent at higher levels of abundance (Triggers 2 – 4).

Under Trigger 1, the charter sector’s target harvest is set at 15.4 percent of the combined catch limit. If the charter sector harvests exactly 15.4 percent of the combined catch limit, they would be allowed to harvest up to 1.54 Mlb of halibut. Uncertainty in management of charter client harvests has prompted the Council to define a range of charter harvest that would be considered acceptable. For Trigger 1, that range is 11.9 percent to 18.9 percent of the combined catch limit. Depending on the size of the combined catch limit, the charter sector could harvest up to 1.89 Mlb of halibut and still be within the acceptable range.

The commercial sector would be allocated the remaining 84.6 percent of the combined catch limit. If the combined catch limit was 9.99 Mlb, the commercial allocation would be just under 8.46 Mlb. As the combined catch limit decreases under Trigger 1, the commercial allocation decreases linearly (Figure 20). For example, if the combined catch limit decreased by 100,000 lb, the commercial allocation would decrease by 84,600 lb and the charter sector’s target harvest would decline by 15,400 lb. These decreases are easily derived, because the allocations are based on the percent of the combined catch limit that each sector is allotted.



**Figure 20** Area 3A charter harvest relative to combined catch limit under each trigger.

Trigger 2 is implemented when the combined catch limit is set between 10 Mlb and 20 Mlb. The charter sector's target harvest is 14.0 percent of the combined catch limit. Trigger 2 requires that charter sector clients be limited to a one-halibut daily bag limit, if they are projected by ADF&G to harvest between 10.5 percent and 17.5 percent of the combined catch. The acceptable harvest range for these percentages would fall between 1.05 Mlb and 3.50 Mlb, depending on the combined catch limit. When the charter sector is projected to harvest less than 10.5 percent of the combined catch limit, the charter regulations could be relaxed to allow clients to harvest two halibut, with one of the fishing being less than 32 inches in length.

Figure 20 shows that the charter sector's target harvest decreases at the break point between Trigger 1 and Trigger 2. The reason for the decrease is the reduction in the target harvest percentage from 15.4 percent in Trigger 1 to 14.0 percent in Trigger 2. The decrease in the charter sector's target harvest, when the combined catch limit increases one pound to a 10.00 Mlb combined catch limit, is 140,000 lb. The 140,000 lb decrease in the charter sector's target harvest is due solely to the change in the target harvest percentage. The 140,000 lb decrease to the charter sector's target harvest is then allocated to the commercial sector as a 140,000 lb increase to its allocation. While the trigger point does cause a substantial shift in the allocation (1.4 percent of the total), the larger target harvest percentage under Trigger 1 allows the charter sector to have a larger target harvest when the combined catch limit is at lower levels. Some members of the charter sector have argued that a fixed allocation is needed to provide stability for their sector. While the larger allocation at lower levels of the combined catch limit does not guarantee a sufficient amount of halibut to meet the charter sector client's demand for halibut trips, it does ensure that more halibut is allotted to the charter sector when combined catch limits are low.

The change in allocations that would occur at the break-point of Trigger 1 and Trigger 2 could place increased public and political pressures on the IPHC when it is setting the combined catch limit, if it is close to the 10.00 Mlb threshold. When the combined catch limit is close to the Trigger 1 and Trigger 2 break point, the charter sector may try to justify a combined catch limit that is just under 10.00 Mlb. That would ensure that their target harvest is larger and acceptable harvest range is larger. Recall that Trigger 1 and Trigger 2 both have a one-fish bag limit if projected harvest falls within the acceptable range. The upper end of the acceptable range is 1.4 percent higher under Trigger 1. That means as little as a one pound change in the combined catch limit could increase the amount of halibut the charter sector could harvest and remain under the cap by about 140,000 lb. While the change in the acceptable range would probably have little impact on the charter sector's harvest regulations, it is likely important, at least from a political perspective, to stay within their acceptable harvest range. The larger cap would help them achieve that goal. Under that same scenario, the commercial sector would likely argue that the combined catch limit should be set just over 10 Mlb. Setting the combined catch limit over 10 Mlb, would directly increase each QS holder's allocation by about 1.4 percent.

The commercial sector is allocated 86.0 percent of the combined catch limit under Trigger 2. That percentage equates to a range of 8.60 Mlb to 17.20 Mlb being allocated to the Area 3A QS holders depending on the combined catch limit.

Trigger 3 is implemented when the combined catch limit is between 20.00 Mlb and 27.00 Mlb. Under Trigger 3, the charter sector's target harvest would be 14.0 percent of the combined catch limit. The Council has identified a range of 10.4 percent to 17.5 percent as being acceptable. Trigger 3 automatically implements a two-fish daily bag limit, where one of the fish must be less than 32 inches in head-on length. If the charter sector is projected to harvest less than 10.4 percent of the combined catch limit, the length limit on the second fish would be removed, so long as the charter sector is not projected to exceed 17.5 percent of the combined catch limit. If the charter sector is projected to harvest in excess of 17.5 percent of the combined catch limit, the charter sector's daily bag limit would be decreased to one fish.

The commercial sector is allocated 86.0 percent of the combined catch limit under Trigger 3. Depending on the combined catch limit set by the IPHC, the commercial sector would be allocated between 17.20 Mlb and 23.22 Mlb.

Trigger 4 would be implemented when the combined catch limit in Area 3A is set at 27.00 Mlb or more. Charter clients would operate under a two-fish daily bag limit, with no length restrictions, if their annual harvest is projected to fall within the acceptable range. The charter sector's target harvest is 14.0 percent of the combined catch limit under Trigger 4, as it was under Trigger 2 and Trigger 3. A 14.0 percent target equates to a minimum of 3.78 Mlb of halibut allocated to the charter sector. As the combined catch limit increases from 27.00 Mlb, the charter harvest would increase linearly. The acceptable percentage harvest range is between 10.5 percent and 17.5 percent of the combined catch limit. Should the charter sector be projected to harvest less than 10.5 percent of the combined catch limit, it would still be limited by the two-fish daily bag limit. If the charter sector was projected to harvest more than 17.5 percent of the combined catch limit, stricter bag limits would be placed on the charter clients to constrain their harvest to the target.

**Initially Projected Area 3A Trigger Levels:** Projections of the combined catch limit through 2015 in Area 3A indicate that the charter sector would be operating under Trigger 4 each year. Table 71 shows the projected combined catch limit for 2010 through 2015 that were provided by the IPHC. The combined catch limit projections ranged between 30.29 Mlb and 42.08 Mlb. Trigger 4 is implemented when the Area 3A combined catch limit is greater than or equal to 27.00 Mlb. Each projected catch limit is greater than 30.00 Mlb and the combined catch limit trend is increasing.

**Table 71** Projected Trigger in Area 3A, 2010–2015.

Year	Combined Catch Limit (Mlb)	Target Charter Harvest (Mlb)	Projected Trigger	Bag Limit	Size Limit	Commercial Allocation (Mlb)
2010	30.29	4.24	4	2	None	26.05
2011	33.00	4.62	4	2	None	28.38
2012	35.94	5.03	4	2	None	30.91
2013	38.63	5.41	4	2	None	33.22
2014	40.74	5.70	4	2	None	35.04
2015	42.08	5.89	4	2	None	36.19

Source: IPHC Staff provided combined catch limit projections for 2008 through 2015. Only data for 2010 through 2015 are included in this table.

Trigger 4 results in a charter angler bag limit of two fish and no size limit on either fish. Charter anglers have the same bag and size limits that they currently have under the status quo GHL. Client demand for trips would not change as a direct result of the 3A bag and size limit regulations.

Because the combined catch limit is projected to increase over the time period considered, implementation of the preferred alternative would have a minimal impact on Area 3A relative to the status quo. Demand could actually increase if persons that had considered a trip in Area 2C opt to take the trip in Area 3A, because of the projected one-fish bag limit in Area 2C. That would shift some amount of effort from Area 2C to Area 3A, if trips were available from LEP holders at the time and location they wanted to fish. The number of clients that would move their halibut trip from one area to another cannot be quantified. Charter operators in Area 2C have indicated that those lost clients would reduce their profitability or make their operation unprofitable. If revenue is reduced to a point that all costs (including opportunity costs) are not met, they may exit the fishery as a result. Persons that were issued a non-transferrable LEP would not have the ability to sell that permit to another charter operator and the number of vessels that could operate in the fishery at a given time would be reduced. If the permit was

transferrable, they could sell the permit to a willing buyer. The revenue from the permit sale would provide some compensation for leaving the fishery.

Decreases in the combined catch limit could potentially trigger a one-fish bag limit in the future in Area 3A. Projections produced in 2008 did not indicate this was a likely outcome in the near future. However, client demand for Area 3A trips would be expected to decrease, if a one-fish bag limited would be implemented. The decreased demand would result in fewer trips being taken and harvest would decrease. The amount that demand would decrease is dependent on the strictness of the harvest regulations (potential size limit on the one-fish bag limit).

Effects of allocation The Preferred Alternative would generate target harvests that are very similar to the allocations under Element 1, Option 1d (Table 37) for Area 2C. None of the options are projected to require more restrictive management measures than the status quo over the years being considered. This occurs because the charter sector is allocated 15.1 percent of the combined catch limit under both options (1d and the Preferred Alternative) when the combined catch limit is 5 Mlb or greater. The difference between the two options is that measures would be adjusted to keep the charter sector within its allocation three to four years sooner<sup>67</sup> under the Preferred Alternative. Actual harvest is expected to more closely mirror the allocation under the Preferred Alternative, especially in the first years of implementation. How close the allocation would be to harvest depends on the ability of ADF&G to predict future harvest under specific bag and size limits and adjust those limits to reflect the annual allocations.

The Council has stated that its objective is to keep total charter angler harvests at or below the sector's allocations. The Council previously considered and rejected using a five-year rolling average to determine if the charter sector had exceeded its allocation. The approach was dropped because of difficulties associated with using "old" data to manage current overages. The Council then considered adjusting the management measures when the charter sector is determined to be over or under its allocation by 0, 5 percent, or 10 percent. Because of timing associated with getting final estimates of charter harvest from ADF&G, the official estimate of charter catch may not be available until the fall of the next year or even later (see discussion of Alternative 2, Element 2). In addition, concern over the accuracy of those data resulted in ADF&G reviewing its data collection programs. That review is ongoing, but early results indicate that differences in reported harvests occurred when comparing the mail survey and logbook harvests. ADF&G is continuing to examine these differences to determine why they have occurred. The Preferred Alternative does not link future regulatory changes to past overages, given the timeliness of the data and time required to implement regulatory amendments. The Preferred Alternative proactively uses historical information and an understanding of the fishery to project future harvests under various size limits and daily bag limits. Adjusting those angler regulations before the start of the fishery is expected to result in more timely and more accurate management of the charter sector's allocation.

Table 72 indicates the charter sector in Area 2C would generate between \$9.5 million and \$10 million, annually, between 2009 and 2011 under the Preferred Alternative. These revenue estimates are down about 30 percent from the \$14.5 million projected for 2007.

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<sup>67</sup> Regulations would be adjusted prior to the start of the fishing season based on projected harvest during the upcoming year under the Preferred Alternative, and they would be adjusted through regulation after an overage was determined to have occurred under Alternative 2, Element 1, Option 1d. This analysis has estimated that it would be at least three years after an overage occurred before the regulations could be revised and implemented.

**Table 72 Estimated charter operator revenue from trips in Area 2C, 2007–2011 (\$ Million).**

Year	Percentage Based Allocations				Fixed Pound Allocations			Mixed Allocations			Pref Alt
	Options										
	1a	1b	1c	1d	2a	2b	2c	3a	3b	3c	4
2007	12.54	16.56	11.20	14.45	13.41	15.84	17.81	12.97	15.53	14.51	14.45
2008	9.72	12.83	8.68	11.20	13.41	15.84	17.81	11.56	13.82	13.24	11.20
2009	8.36	11.04	7.47	9.64	13.41	15.84	17.81	10.88	13.00	12.64	9.64
2010	8.30	10.96	7.41	9.57	13.41	15.84	17.81	10.85	12.96	12.61	9.57
2011	8.67	11.45	7.74	9.99	13.41	15.84	17.81	11.04	13.18	12.78	9.99

Assumptions: Trip prices are \$225. The number of clients fishing is estimated by dividing the target allocation divided by the historical average catch per trip (24 lb per client).

The Preferred Alternative does not limit the amount of halibut the charter sector may harvest *during* a season, either by changing bag limits, length limits, or other angler regulations in-season. Management measures are adjusted to limit harvest based on the charter sector’s allocation *before* the fishing season starts. This approach has the potential to limit overages sooner than would occur under the three options under Alternative 2, Element 1. Charter LEP holders would also be given the opportunity to lease halibut from the commercial sector to provide greater flexibility for their clients to harvest halibut. Element 5 – Supplemental Individual use of GAF—provides a more detailed discussion of leasing and its impacts.

The Preferred Alternative would allocate 14.0 percent to the charter sector in Area 3A, each year, because the combined catch limit is expected to be greater than or equal to 27 Mlb (Trigger 4) each year. This equates to Element 1, Option 1a. Table 39 indicates that this allocation exceeds the projected harvest amounts in the near term and no changes to the 2-fish bag limit are expected. Unharvested halibut will contribute to future biomass.

Table 73 shows that charter revenues are projected to range from \$29.0 million to \$34.7 million between 2009 and 2011. The assumptions used to generate these estimates are listed below the table. These estimates are not intended to represent total charter operator revenue; changing any of the assumptions would alter the estimated charter revenue from providing trips.

**Table 73 Estimated charter operator revenue from trips in Area 3A, 2007–2011 (\$ Million).**

Year	Percentage Based Allocations				Fixed Pound Allocation			Mixed Allocation			Pref Alt
	1a	1b	1c	1d	2a	2b	2c	3a	3b	3c	4
2007	34.90	38.12	31.43	31.43	27.38	30.08	31.13	31.14	34.71	31.28	34.65
2008	29.21	31.91	26.31	26.31	27.38	30.08	31.13	28.29	31.51	28.72	29.01
2009	29.96	32.72	26.98	26.98	27.38	30.08	31.13	28.67	31.93	29.05	29.74
2010	32.03	34.98	28.85	28.85	27.38	30.08	31.13	29.70	33.10	29.99	31.80
2011	34.89	38.11	31.43	31.43	27.38	30.08	31.13	31.13	34.71	31.28	34.65

Assumptions: Trip prices are \$225. The number of clients fishing is estimated by dividing the target allocation divided by the historical average catch per trip (30 lb per client).

Because the commercial sector is expected to be allocated 86.0 percent of the Area 3A combined catch limit under the Preferred Alternative, the charter sector's actual harvest would not affect its allocation in a year. Therefore, the commercial sector's allocation would only be affected by changes in the combined catch limit, until it falls below 10 Mlb. Only then would the charter sector's percentage of the combined catch limit increase to 15.4 percent, which would cause the commercial allocation to decrease to 84.6 percent of the combined catch limit. At the trigger point, a one pound increase in the combined catch limit to 10 Mlb would result in the commercial sector allocation decreasing by 140,000 lb and the charter allocation increasing that same amount. Because of this shift in allocation, each sector would likely lobby for the combined catch limit to be just over or under the 10 Mlb threshold to take advantage of the change in allocation percentages.

Increased demand for charter trips does not affect participants in the commercial fishery when the charter sector is constrained (Criddle 2006a). The Preferred Alternative is assumed to constrain the amount of halibut the charter sector can harvest, so the commercial allocation would not be reduced by increased charter harvests; it is anticipated that the IPHC would use the charter allocations, and not charter harvests, in its determinations of the combined catch limits. Unless there are conservation concerns, charter overages would have a minor impact on future combined catch limits. However, the commercial sector would be directly impacted by a charter allocation that is larger than the charter sector needs to meet their client demand. That scenario would allow the charter sector to increase its harvest, as client demand increases, until it reaches its allocation. From that point forward, the allocation would constrain charter client harvests and the commercial sector would not be impacted by further increases in client demand.

The Council emphasized that it does not intend to revisit or readjust bag limits or size limits; such changes would be triggered automatically by changes in combined charter and setline catch limits established annually by the IPHC. Harvest limits would be implemented based upon determination of the combined charter and setline catch limits by the IPHC and the parameters described above under the Preferred Alternative. Those changes would occur through the process it has defined using input from the IPHC and ADF&G. All regulations that apply to the charter fishing season are expected to be implemented prior to the start of the fishing year and remain in place for the entire season.

## **New Information Since Final Action**

### **IPHC Halibut Biomass Estimates and Commercial Catch Limits<sup>86</sup>**

The IPHC projections of halibut biomass through 2013 used in the above analysis, which were provided to the Council for use in the determination of its preferred alternative, have been superseded by new information regarding the status of the Pacific halibut stock. Each year the IPHC staff assesses the abundance and potential yield of Pacific halibut using all available data from the commercial and sport fisheries, other removals, and scientific surveys. Since 2006, the IPHC stock assessment model has used a coastwide dataset to estimate total exploitable biomass. The current IPHC stock assessment revised the 2010 total exploitable biomass estimate of 334 million lb provided at the start of 2010 downwards to 275 million lb, and projects an increase of 16 percent over that value to arrive at the 2011 value of 318 million lb. Female spawning biomass of Pacific halibut is estimated at 350 million lb at the start of 2011. This is an increase of nearly 6 percent over the beginning of 2010 estimate of 331 million lb. Ongoing declines in size at age, which strongly affect selectivity-at-age, caused the downward revision in total exploitable biomass. Projections based on current age compositions suggest that both exploitable and spawning biomass will increase over the next several years as several strong year classes recruit to the fishable and spawning components of the population. These projected increases are tempered both by potential ongoing decreases in size-at-age, as well as realized harvest rates which continue to be above target in several regulatory areas (e.g., Area 2C).

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<sup>86</sup> This section is adapted from Hare (2010).



For many years, the staff assessed the stock in each regulatory area by fitting a model to the data from that area. This approach assumed that the stock of fish of catchable size in each area was closed, meaning that net migration was negligible. IPHC studies showed a continuing and predominantly eastward migration of catchable fish from the western area (Areas 3 and 4) to the eastern side (Area 2). The effect of this unaccounted for migration on the closed-area stock assessments was to produce underestimates of abundance in the western areas and overestimates in the eastern areas. This means that exploitation rates were well above the target level in Area 2 and a disproportionate share of the catches have been taken from there. Several other changes to the stock assessment were also made that resulted in changes to biomass estimates and fishery catch limits (Hare 2010).

Total removals from the halibut populations come from seven categories: commercial catch (IPHC survey catch is included in this category), sport catch, bycatch of halibut that are over 32 inches in length (O32) from a variety of fisheries targeting species other than halibut, personal use catch, O32 wastage from the commercial halibut fishery, sublegal-sized bycatch from non-halibut fisheries, and sublegal-sized wastage from the commercial halibut fishery. Note that in 2011, the IPHC provided additional categories of bycatch and wastage of halibut that are under 32 inches in length (U32). The first category is bycatch and wastage of halibut that are under 26 inches in length (U26). The second category is bycatch and wastage of halibut that are under 32 inches and over 26 inches in length (U32/O26). These additional categories were provided to allow for alternative fishery CEY computations. Detailed descriptions of each category are contained in the Fishery Removals section of the annual Report of Assessment and Research Activities (Gilroy et al. 2011). The 2010 regulatory area total removals are listed in

Table 74 and illustrated in Figure 21. On a coastwide basis, total removals are at their lowest level since 1996 and third lowest total over the past 23 years (Figure 22).

**Table 74 The 2010 preliminary estimates of total removals, 2010 catch limits and catch of Pacific halibut by regulatory area, and 2010 sport guideline harvest level and sport guided harvest for Areas 2C and 3A (thousands of lb, net weight).**

<b>Area</b>	<b>2C</b>	<b>3A</b>
<b>Commercial</b>	4,388	20,092
<b>Sport</b>	2,548	5,068
<b>Bycatch Mortality:</b>		
O32 fish	214	951
U32 fish	127	1,712
<i>Breakdown of U32</i>		
U32/O26	88	777
U26 fish	39	935
<b>Personal Use<sup>2</sup></b>	457	329
<b>Wastage Mortality:</b>		
O32 fish	9	20
U32 fish	242	1,417
<i>Breakdown of U32</i>		
U32/O26	233	1,369
U26 fish	9	48
<b>IPHC Research</b>	96	316
<b>Total Removals</b>	8,081	29,905
<b>2010 Catch Limits<sup>5</sup></b>	4,400	19,990
<b>2010 Catch</b>	4,488	20,092
<b>2010 Sport GHL</b>	788	3,650
<b>2010 guided harvest</b>	1,279	2,992

<sup>2</sup> Includes 2009 Alaskan subsistence harvest estimates.

<sup>5</sup> Does not include poundage from the underage/overage programs

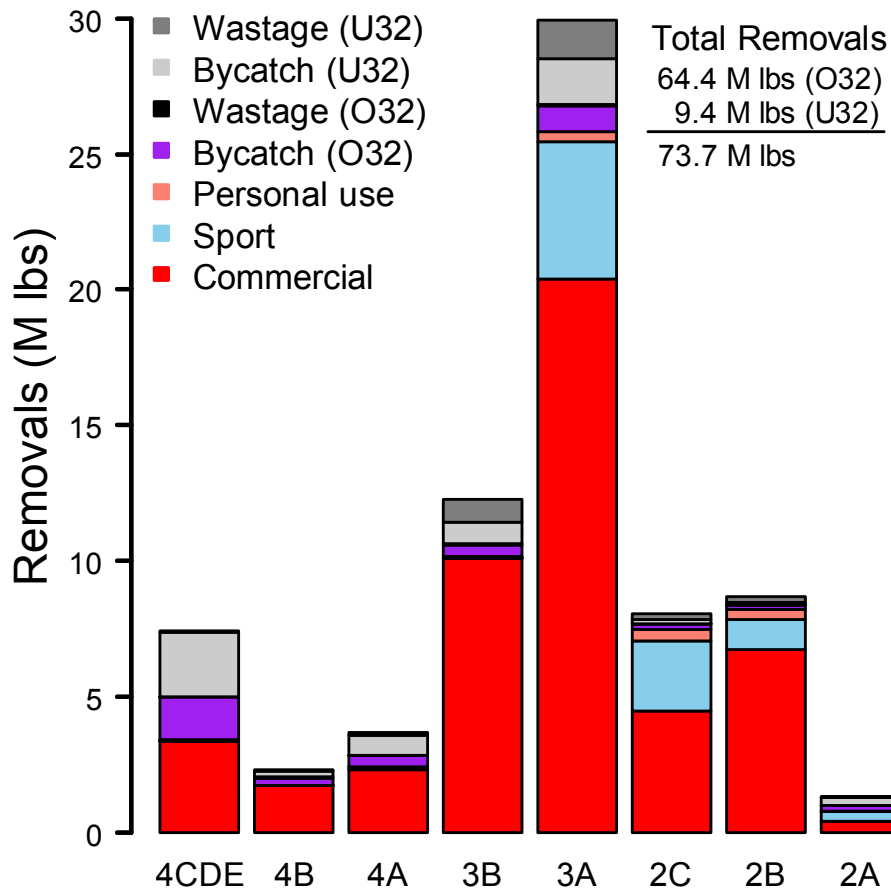
The coastwide assessment indicates that the exploitable biomass of halibut has declined approximately 50 percent over the past decade. This declining trend is seen in almost all of the area-specific survey and commercial weight per unit effort (WPUE) indices. But the breadth and reasons behind the trends vary by area. The following discusses the trends and grouping of diagnostic plots to assess the past and present removals, stock trends, and prospects for each area. These indicators convey a comprehensive picture for each area. The pattern of changes between 1996 removals and 2010 removals, however, has been quite different between areas.

For each of the areas, six plots are illustrated. These include the following:

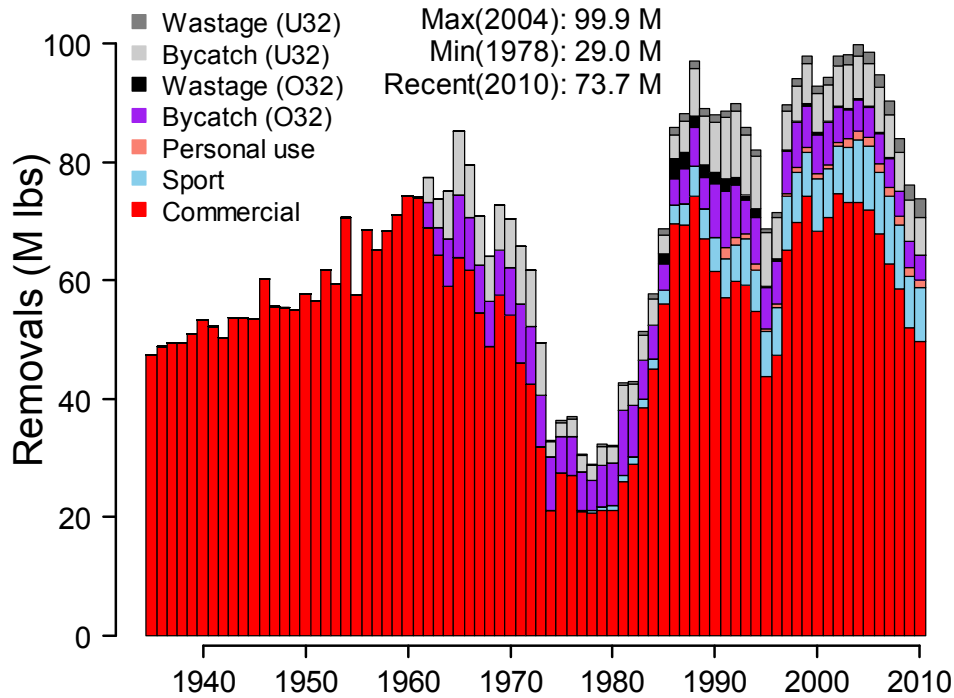
1. Total removals – illustrated by category (commercial catch, sport, etc.)
2. Abundance indices – these include the raw and adjusted/weighted survey WPUE indices and the coastwide assessment with adjusted/weighted survey partitioning.
3. 2010 age structure of the survey catch.
4. Surplus production. Stated simply, surplus production is the amount of total catch that, when taken exactly, keeps the exploitable biomass at the same level from one year to the next. If the biomass increases, then total catch (termed “removals”) was less than surplus production. If the biomass declines, then removals were greater than surplus production. Removals exceeding surplus production can lead to long-term declines in biomass; stock building results from taking less than surplus production.
5. WPUE and effort – Long-term trends in commercial fishing effort and WPUE.
6. 2010 age structure of the commercial catch.

**Area 2C** indices are illustrated in Figure 23. Between 1997 and 2006, total removals were stable, averaging 12.4 million lb in Area 2C. Removals declined sharply between 2007 and 2010, in response to the change from closed-area to coastwide assessment and the resultant revised view of relative halibut abundance in Area 2. Bycatch of U32 fish in Area 2, and subsequent lost yield to CEY, is estimated to be rather low, however yield lost to “upstream” bycatch of U32 halibut is estimated to be much greater than yield lost to “local” U32 bycatch (Valero and Hare 2011). Deductions to total CEY for O32 bycatch in Area 2C is low. Surplus production estimates suggest that removals exceeded surplus production in Area 2 for most of the past decade. In Area 2C commercial effort has steadily declined for the past four to five years.

The main indices of abundance suggest a steady decline in biomass from the mid 1990s to the late 2000s. Area 2C, which declined from an average survey WPUE of around 250 lb/skate in the late 1990s has apparently leveled off at around 100 lb/skate over the past three years. Thus, while it does appear that Area 2C declines have been arrested, the stabilized level is the lowest on record and at least 60 percent lower than the highest level. Commercial WPUE tells basically the same story as survey WPUE. Survey partitioning of the coastwide biomass suggests that the beginning of year 2011 EBio is level in Area 2C from 2010 values. Generally much younger age structure of fish are caught in Area 2. Mean age is around 11 years of age, with little difference between males and females. In particular, the catch of females is concentrated on ages where maturity at age is low thus removing females from the population before many have the opportunity to contribute to the spawning biomass.



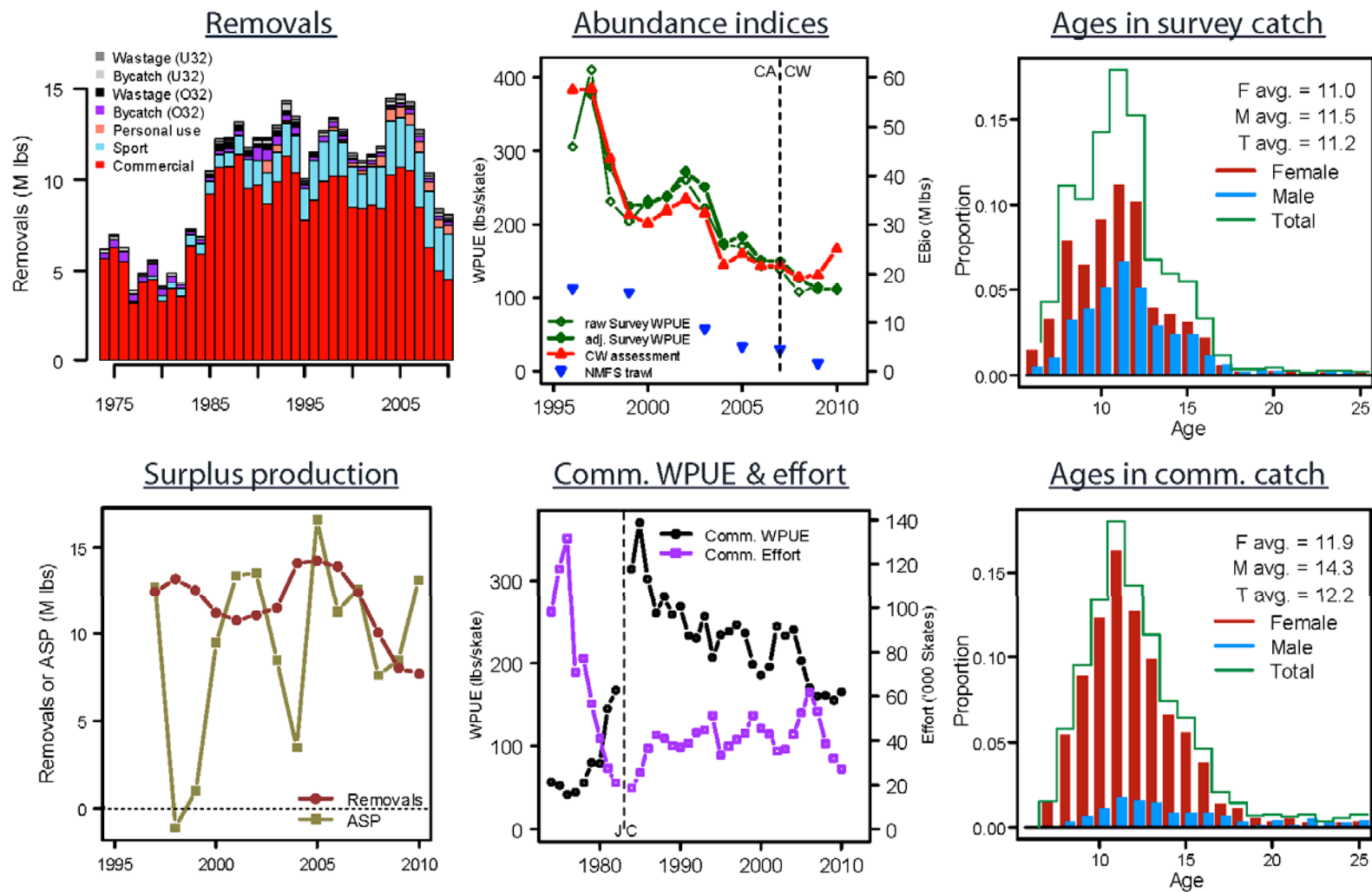
**Figure 21 Total removals by type and regulatory area for 2010.**



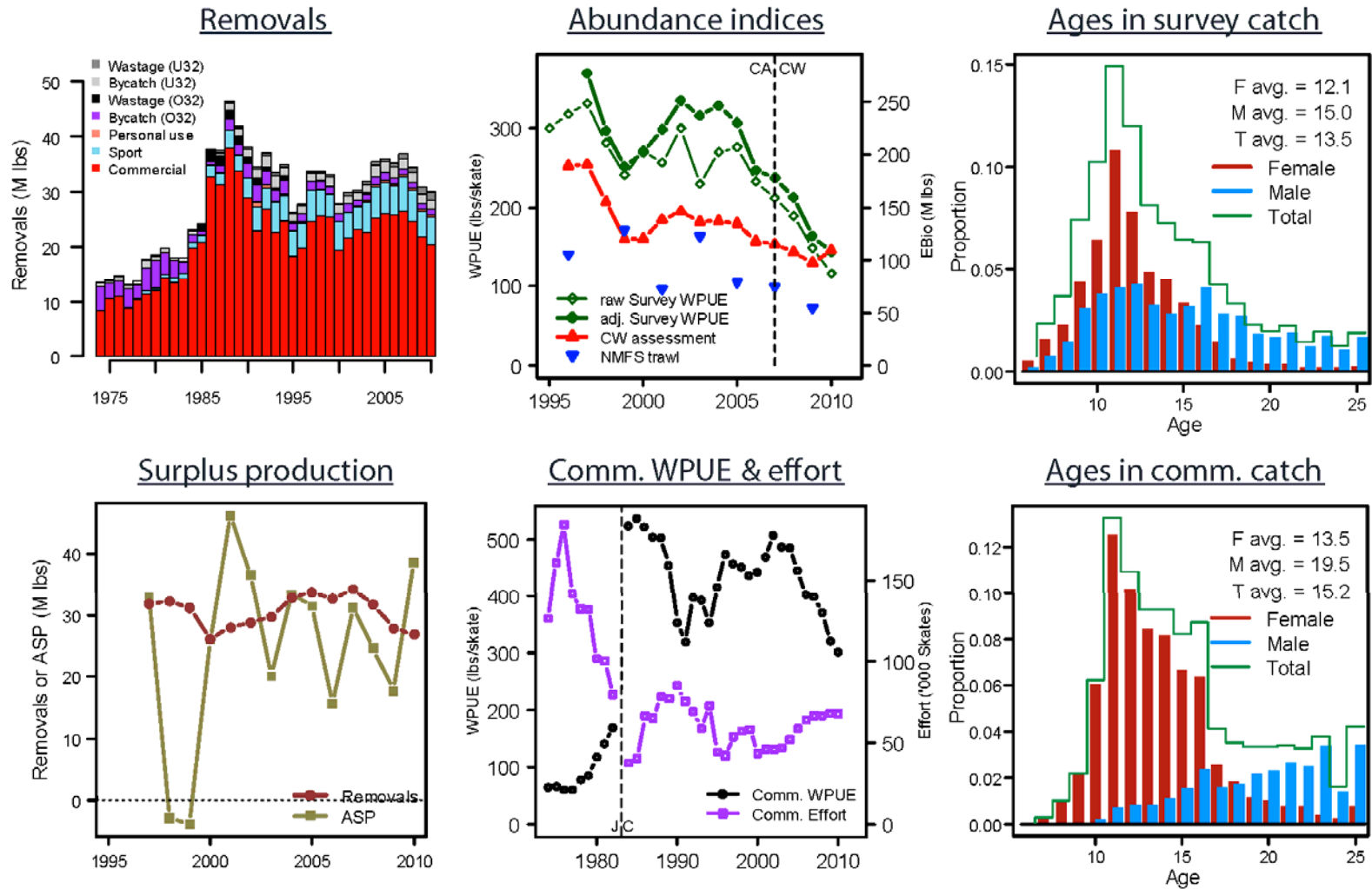
**Figure 22 Total removals coastwide for the period 1935-2010. Year and amount of minimum, maximum, and most recent removals are also listed.**

All indices are consistent with a steadily declining exploitable biomass up to at least 2007. The reasons for the decline are likely twofold. The first is the passing through of the two very large year classes of 1987 and 1988. Every assessment over the past decade has shown that those two year classes were very strong in comparison to the surrounding year classes. Now that those two year classes are 20 years old, their contribution to the exploitable biomass and catches has sharply declined and the drop in biomass was to be expected as they are replaced by year classes of lesser magnitude. Secondly, realized harvest rates were substantially higher than the target rate of 20 percent, and for a few years were in excess of 50 percent (of EBio, not total biomass). Harvest rates have been brought down sharply from peak levels.

Removals have been generally larger than surplus production and that stalled rebuilding of regional stocks. The reduced removals now appear to have arrested decline of the regional biomass. Area 2C appears to have stabilized but at a low level that limits available yield. There are multiple signs that two or three large year classes are set to enter the exploitable biomass, though this is dependent both on reducing harvest rates that are above target as well as on the growth rate. On that score, it is encouraging that removals have been brought down over the past few years. Realized harvest rates remain above target levels but are closer to target levels than at any time in the past decade.



**Figure 23** Summary of removals, abundance indices, age structures, surplus production, and commercial effort for Area 2C.



**Figure 24** Summary of removals, abundance indices, age structures, surplus production, and commercial effort for Area 3A.

**Area 3A** halibut status is illustrated in Figure 24. While this area occupies part of the current central area of distribution (the other part is Area 3B) of the halibut stock, it has substantially different exploitation and biomass histories over the past 10-20 years. Area 3A removals, both the total as well as the individual components (commercial, sport, bycatch) have been relatively stable over the past 15 years. Commercial effort has also seen relatively little variation. During the past decade when WPUE indices were falling sharply coastwide, Area 3A generally showed the most stability. However, Area 3A survey WPUE has now shown five consecutive years of decline and the 2010 value of 117 lb/skate is by far the lowest on record and is about 40 percent of the level seen in the late 1990s. Commercial WPUE is also at its lowest point since the change from “J” to “C” hooks in 1984 and is at about 66 percent of its late 1990s level. Paralleling the declines in survey and commercial WPUE, EBio has declined steadily in 3A since 2005. Area 3A has a much broader spectrum of ages in the population than is seen in Area 2. Average age for females in survey catches is 13 years and for males is 16 years of age.

For a long time, Area 3A appeared to be the most stable of the regulatory areas. It has been fully exploited for many decades and there is a wealth of data detailing its population dynamics. It also sits at the current center of halibut distribution and it appears that emigration is roughly equal to immigration. Like Area 2, Area 3A benefited from the very large year classes of 1987 and 1988 and the slow decline in exploitable biomass is the result of those year classes dying off. The biomass remains by far the largest of any of the regulatory areas, however the sharp declines of the past several years are a sign that exploitation rates may be too high. Until the biomass decline has ended, catch limits will trend downwards in Area 3A.

### **Catches and Changes to Management for the Charter Halibut Sector**

Gilroy (2010) summarized commercial and charter halibut catches for 2010. The 2010 Area 2C sport harvest is projected to have increased slightly to 2.55 million pounds from 2.37 million pounds in 2009 (Table 75). The guided sector harvest increased slightly; average weight increased from 23.2 lb to 27.3 lb while the number of fish decreased by 15 percent. Even under daily bag limit of one halibut for the last two years, the charter fishery exceeded the Area 2C GHL (788,000 lb) by 62%. Area 3A had a slight increase in harvest from the previous year, resulting from an increase in number of fish caught but offset by a decrease in average weight. The guided sector’s harvest was under the GHL.

The Council recommended a limited access program for the charter sector, which was effective on February 1, 2011. Although the limited access program is expected to stabilize participation in the charter sector, it is not anticipated to reduce charter harvest. This program is incorporated elsewhere into the RIR.

### **37-inch Maximum Size Restriction in Area 2C<sup>87</sup>**

At its 2010 Annual Meeting, the IPHC served notice to the public that it would consider action for 2011 in the absence of effective management of the charter harvest in Area 2C. At the 2011 IPHC Annual Meeting, the Commission noted that the Council approved a CSP in 2008 to more effectively manage harvest by the charter sector in Areas 2C and 3A. The IPHC also noted that the CSP has not yet been approved as of January 2011, and thus recommended regulatory action for 2011 that was designed to restrict charter harvest of halibut in Area 2C to the GHL. At its 2011 Annual Meeting, the IPHC recommended continuation of a one-fish daily bag limit implemented by NOAA Fisheries in 2009, with an additional restriction that the retained fish be no longer than 37 inches, total length. The length limit was selected to reduce the harvest of halibut in Area 2C to the GHL. The calculation used to determine the size limit was based on an assumption that the 2011 harvest (in number of fish) would be slightly less than the 2010 projection, and that each fish harvested would be of a size equal to the maximum limit. NMFS implemented the IPHC recommendation due to concerns over declining halibut stocks.

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<sup>87</sup> This section is adapted from [http://www.alaskafisheries.noaa.gov/sustainablefisheries/halibut/charter/factsheet\\_iphrec.pdf](http://www.alaskafisheries.noaa.gov/sustainablefisheries/halibut/charter/factsheet_iphrec.pdf)

**Table 75** Area 2C and 3A charter halibut harvest and Guideline Harvest Level (GHL) (millions of pounds, net weight), 2000-2010.

Year	Area 2C		Area 3A	
	Guided	GHL	Guided	GHL
2000	1.132	-	3.14	-
2001	1.202	-	3.133	-
2002	1.275	-	2.733	-
2003	1.412	1.432	3.382	3.65
2004	1.75	1.432	3.668	3.65
2005	1.952	1.432	3.689	3.65
2006	1.804	1.432	3.664	3.65
2007	1.918	1.432	4.002	3.65
2008	1.999	0.931	3.378	3.65
2009	1.245	0.788	2.734	3.65
2010 <sup>1</sup>	1.279	0.788	2.992	3.65

<sup>1</sup> Preliminary

### Effects of New Information

The addition of the new stock assessment information results in retrospective differences between actual and projected estimates relative to the information in the public review draft of the analysis. This is a feature of stock assessment models whereby current estimates of biomass for previous years are revised with new information and appears in retrospective analyses of numerous groundfish stocks (<http://www.afsc.noaa.gov/refm/stocks/assessments.htm>). New (and more) data provide a better biomass estimate in 2009 for 2010, for example, than the projection in 2006 for 2010.

Commercial catch limits in 2010 are dramatically lower than in 2006 in these two regulatory areas, and Area 2C in particular, as a result of continued declines reported in recent halibut stock assessments. Therefore the effects of continued overages of the GHL in Area 2C are even greater now (under reduced halibut biomass estimates and catch limits) despite management attempts to limit the Area 2C charter sector to its GHL by increasingly restrictive management measures.

Since 2007, the charter fishery in Area 2C has been subject to numerous restrictions implemented by NMFS in an attempt to more closely align charter harvest with the GHL; charter anglers are currently restricted to a one-halibut daily bag limit. These measures have not been sufficient to maintain the charter harvest within the GHL. Halibut harvest in the Southeast Alaska charter fishery, Area 2C, has exceeded established annual GHLs, approved by the Secretary of Commerce, each year since 2004.

The following contains additional analysis of the Preferred Alternative, if it had been implemented for 2011. The revised estimates of the number of GAF projected to allow charter anglers to have equivalent harvest opportunities to non-charter anglers under the Preferred Alternative are the key findings of this section.

The estimates of required GAF are based on certain assumptions.

- The starting point for charter demand are fishery conditions in 2010, including estimates of total harvest as projected by ADF&G in its November 1, 2010 letter to the IPHC. These conditions are held constant for 2011.
- As non-charter anglers operate under a two-fish daily bag limit of unrestricted size, historical ratios of “first fish/second fish” in the charter fishery are used to scale up charter halibut harvests to unrestricted conditions.



## Area 2C

In 2011 Area 2C anglers will operate under a daily bag limit of one fish of 37 inches as recommended by the IPHC and implemented by NMFS (<http://www.alaskafisheries.noaa.gov/frules/76fr14300.pdf>) in 2011 in accordance with the Preferred Alternative (as if it had been implemented in 2011). In 2010 Area 2C charter anglers operated under an unrestricted one fish daily bag limit and harvested approximately 46,800 halibut with total weight of 1.279 Mlb and an average weight of 27.3 Mlb. If demand stays constant then providing charter halibut anglers with the same opportunities as in 2010 (i.e., an unrestricted size on the first fish) would consume approximately 46,800 GAF. If anglers harvest the same total weight at the long-term unweighted average weight (i.e., 20.9 pounds) for the area, then an estimated 61,000 GAF would be required. However, this starts to explore the difference between estimating future demand based on weight or number of fish. In order to provide charter anglers with the equivalent opportunity to non-charter anglers then the analysis examined the historical “first fish”/“second fish” ratio. In Area 2C the last ratio calculated by ADF&G is 60.3 percent “first fish” and 39.7 percent “second fish”. This calculation would add 0.842 Mlb to the expected charter harvest and would require an additional 31,000 GAF at 2010 average harvest weights or 40,000 GAF at historical average harvest weights. Thus, the analysis provides a range of 78,000 GAF at higher average weights and up to 102,000 GAF at lower average harvest weights, but this second estimate mixes harvest demand measurement techniques (i.e., weight versus fish). If the analysis adds 46,800 GAF (for the first fish) to the 40,000 GAF (for the second fish at a lower average weight) then the analysis would estimate a demand for roughly 87,000 GAF in Area 2C in 2011 within the larger range provided above. Current estimates for GAF available from the Area 2C commercial sector range from 50,000 to 100,000 GAF. Thus, the analysis indicates that in 2011 the GAF required to provide charter anglers in Area 2C with harvest opportunities equivalent to current non-charter anglers is a substantial portion, if not all, of the total number of potentially available GAF under the Preferred Alternative.

## Area 3A

The analysis estimates that Area 3A anglers fishing under the Preferred Alternative (as if it was implemented in 2011) would have faced a daily bag limit of one fish of unrestricted size. The analysis assumes that the IPHC staff would have recommended a combined Area 3A catch limit of 18.01 Mlb for 2011, with allocations of 2.521 Mlb to the charter sector (14 percent of the combined catch limit) and 15.49 Mlb to the commercial sector. Note that ADF&G projected that unrestricted harvest in Area 3A in 2010 was 2.992 Mlb. Holding this number constant, then the expected charter harvest is 16.6 percent of the combined catch limit. The IPHC’s combined catch limit places the Area 3A fishery within Tier 2, which is associated with a daily bag limit restriction of one fish of unrestricted size. The management measures are not adjusted further because the calculation of charter halibut harvests are within the target ranges specified under the Preferred Alternative.

This analysis estimates that 75,000 to 90,000 GAF would be required to provide Area 3A charter anglers with harvest opportunities equivalent to non-charter anglers. In the past, Area 3A harvest has been composed of 53 percent “first fish” and 47 percent “second fish”. In other words, almost all anglers who kept one halibut were able to keep a second halibut. Under the projected 2011 sector allocation, anglers would not need a GAF for their first fish as it is of unrestricted size. However, a GAF would be required for charter anglers to harvest a second fish. The analysis estimates GAF demand by weight at 1.406 Mlb (or 47 percent of the assumed unrestricted harvest demand of 2.992 Mlb). If average halibut weight in Area 3A in 2011 is equivalent to unweighted average weight in 2010 (i.e., 15.3 pounds net weight) then providing anglers with historic harvest opportunities would require approximately 92,000 GAF. If 2011 average harvest weight is closer to the 1995-2010 average of 18.8 pounds then the total number of GAF needed is closer to 75,000 GAF. Prior estimates concluded that the total possible number of GAF is 150,000 to 190,000. Thus, it is theoretically possible for GAF demand to be met, but the estimated demand is still a non-trivial portion of total GAF availability.

## Two Implementation Issues Deferred to Final Analysis

In its selection of the Preferred Alternative for a Catch Sharing Plan, the Council based its decision on some of the concepts included under Alternative 2, but it incorporated several new aspects that had not previously been analyzed. At final action, the Council left two steps in the process of implementing the CSP unresolved; these two steps are highlighted in Figure 25.

Issue 1 - projecting charter halibut harvests to determine annual management measures; and

Issue 2 - selecting maximum size limit(s) of halibut under Tiers 1 and 2.

Subsequent analyses on Issue 1 (Meyer 2009) and Issue 2 (King 2009) were developed for SSC review in February 2009. The SSC provided its recommendations to the Council at the February 2009 Council meeting. The Council received the SSC recommendations, inquired about certain aspects of the SSC recommendations, identified that a forthcoming analysis by ADF&G of its logbook program may aid in addressing some of the missing data that are needed for future applications under the CSP, but did not provide further guidance on these issues. Therefore, the analysts proceeded with preparing the following supplemental analyses as directed by the Council during its final action deliberations in October 2008.

### Harvest Projections

Meyer (2009) proposed alternative approaches for projecting charter halibut harvests with which to determine appropriate annual management measures (Appendix D), with the intent that the SSC would provide guidance on methods and practicality of implementation. He identified the unstated goal of the CSP to be that management measures dictated by the plan would result in charter harvests that average the target allocation. The implied goal of the projections is that the average error in projected charter harvests should be around zero.

The CSP proposes a fundamentally different way of accounting for charter removals than is currently used, and would require changes in the timing, number, and methods for ADF&G harvest projections. Currently, charter removals, other noncommercial removals, PSC losses, and waste (including mortality of sublegal commercial halibut) are deducted from the total allowable removals before the IPHC sets a commercial fishery catch limit. The IPHC typically deducts the previous year's estimates of these miscellaneous removals when setting the commercial catch limit for the upcoming year. Under the CSP, charter harvest would not be deducted, but would instead be part of the combined catch limit to be allocated according to the CSP. Unguided sport harvests would still need to be estimated (likely a projection) for the most recent year, for purposes of stock assessment. Meyer identified the process with respect to charter harvest projections as follows:

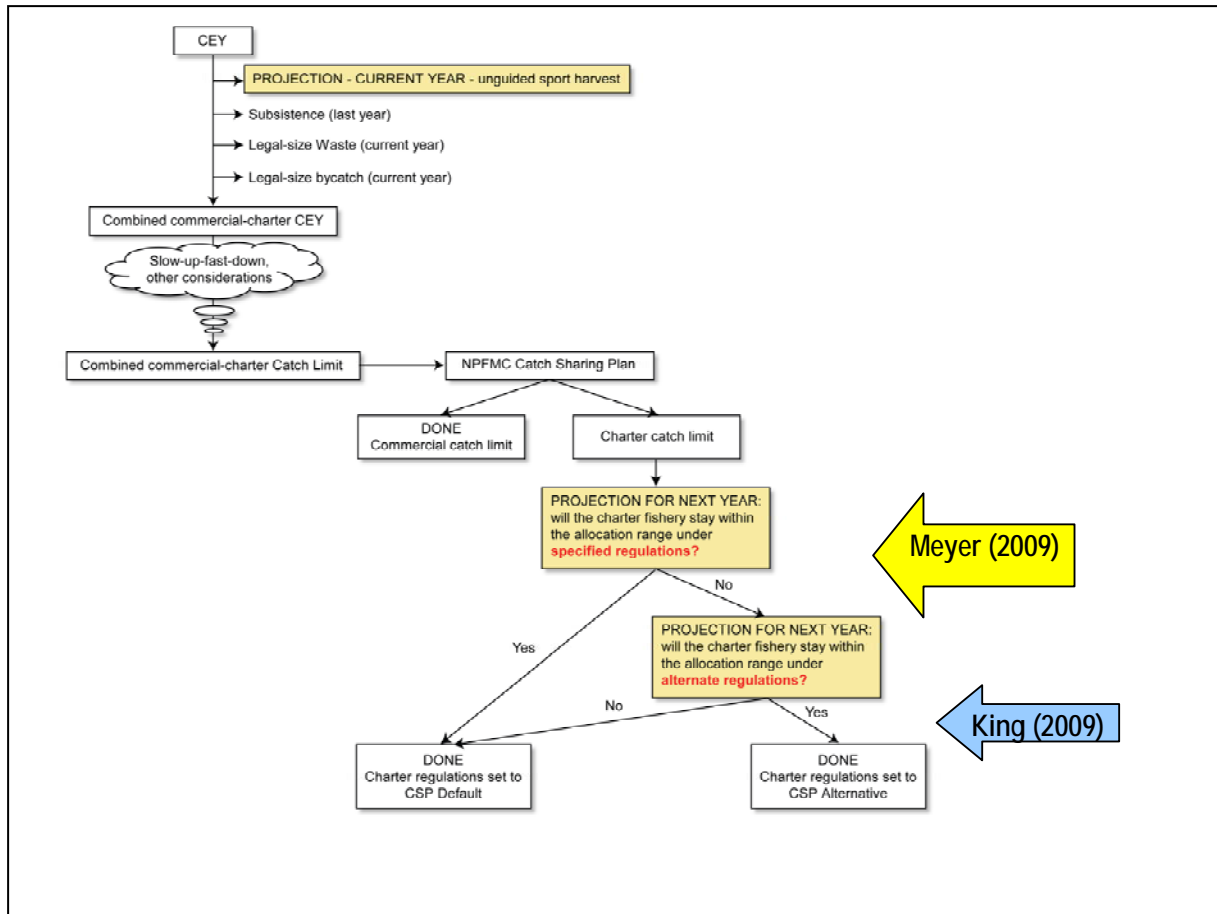


Figure 25 Process for implementing the Preferred Alternative.

### Halibut Catch Sharing Plan for Area 2C and Area 3A.

1. October (year  $i$ ): ADF&G provides charter and private sport harvest projections for year  $i$  to the International Pacific Halibut Commission (IPHC), so they can incorporate sport fishery removals into the stock assessment.
2. January (year  $i+1$ ): The IPHC would approve a charter and commercial combined catch limit. Allocation percentages specified in the CSP would be applied to the combined catch limits for IPHC Areas 2C and Area 3A, to derive the commercial fishery catch limits.
  - (a) The combined catch limit would determine the default regulations for the charter fishery in each area (bag limits and size limits, if necessary) (Tables 1 and 2 in King [2009]). Charter harvest would be projected (in weight units) for year  $i+1$  under these default bag and size limit to determine whether it would fall within the specified allocation range.
  - (b) If the projected charter harvest exceeds the allocation range maximum, either a size limit would be implemented to bring charter harvest to the desired allocation or the regulations would revert to the next more restrictive level.
  - (c) If the projected charter harvest falls below the allocation range minimum, the regulations would be liberalized, but only if projected harvest for year  $i+1$  under the more liberal regulations falls within the desired charter allocation range.

Therefore, at least two, and sometimes three charter harvest projections may be required for each area each year: (1) harvest for year  $i$  for stock assessment, (2) harvest for year  $i+1$  under default regulations determined by the level of the combined catch limit (scenario 3a above) and in some cases, (3) harvest for year  $i+1$  to evaluate allocation under more liberal or more restrictive regulations (scenario 3b). He summarized his analysis in the following points.

- One-year and two-year projections are needed (up to 3/area/year)
- Forecasting under changing regulations
  - Simple one-time change
  - Time series basis contains multiple regulatory regimes
  - How to express uncertainty?
- Consequences of Errors
  - Large - Needlessly regulate fishery or fail to protect stock
  - Small - Do they balance?
- Use of Logbook Data Would Help
  - Better current-year estimates
  - One-year forecasts

In its review of Meyer (2009), the SSC made the following recommendations to the Council on how to proceed with implementing charter halibut harvest projections under the CSP, in its report at the February 2009 meeting (bolded text is from the SSC report).

*“Projecting charter halibut harvests is difficult, because it requires predictions or assumptions about how the consumer demand for charter trips will change through time, predictions or assumptions about how people will respond to regulatory change, as well as changes in the abundance, distribution, and size composition of halibut stocks. The limited time series data available for use in estimation severely constrains model complexity. The discussion paper effectively describes these limitations and how they affect forecast accuracy. It also describes asymmetries in risk and the distribution of risk that arises from under- and over-estimating catch. **The forecast methods used in the discussion paper are suitable, given current data limitations.** While the resulting forecasts have had large errors, errors of this magnitude are not surprising given the uncertainties in the data, variability in the processes affecting the halibut stock and its fisheries, and the shortness of the time series. **Consequently, the SSC believes that the magnitude and range of uncertainties will prevent the forecast accuracy to be anywhere near the plus or minus 3.5% allowed in the charter range allocation of the preferred alternative.**”*

*While the SSC believes that the current projections are appropriate, given current information, there are some avenues of research that warrant further investigation. A contingent behavior model estimated on survey data might provide improved estimates of changes in the demand for charter trips. Incorporating halibut stock dynamics into the projection model could provide improved estimates of catch rates and sizes. Logbook data that are currently being collected should provide the most promising source of timely estimates of current year catch that will be useful for updating catch projections. **The SSC recommends that data from logbooks be brought into the catch projection methodology, as soon as they can be properly validated.**”*

#### Maximum Size Limits



The second issue, which was addressed by King (2009) and in this analysis after the Council selected its Preferred Alternative, examines alternative methods to select a maximum length limit to manage charter halibut harvest in times of low abundance.<sup>88</sup> The Council intends that the bag limit and/or maximum size

<sup>88</sup> [http://www.alaskafisheries.noaa.gov/npfmc/current\\_issues/halibut\\_issues/HalibutCSPdisc709.pdf](http://www.alaskafisheries.noaa.gov/npfmc/current_issues/halibut_issues/HalibutCSPdisc709.pdf)

limits would be implemented, along with the combined catch limits for Area 2C and Area 3A, in annual IPHC regulations, and not be subject to separate Council review/action and NMFS rulemaking. Therefore, the four management tiers listed under the Preferred Alternative would be implemented in federal regulation upon Secretarial approval of the Preferred Alternative. Federal regulations accompanying this action, therefore, need to explicitly describe the tiers, the resulting management measure under each tier, how the charter halibut projections would be determined by ADF&G (see above discussion) and how the management measure would be selected. No action would be required by the IPHC, other than to set a combined catch limit for each area. NMFS would identify the management measures to be in effect for the charter sector in the next season in annual IPHC regulations, based on the projected charter sector harvest as the percentage of the combined catch limit identified in the Preferred Alternative.

The Council’s preferred bag and length management measures fall into four tiers for each regulatory area. While the daily bag limit and length limit regulations in Tiers 3 and 4 are specific, the maximum length regulations in Tiers 1 and 2 are undefined as the Council intended to provide flexibility to fishery managers in time of low abundance by reducing harvest while having the least effect on the charter industry and its clients. The Council’s language states that under both Tier 1 and 2, the charter fishery will operate under a one-fish daily bag limit. However, if the charter harvest as a percentage of the combined charter and setline catch limit exceeds a specified percentage in either Tier *then a maximum length limit will be implemented to reduce the projected harvest level to be lower than x.x%<sup>89</sup> of the combined charter and commercial catch limit (CCL)* (See Table 76 as an example of where this would apply). This language requires the use of equations in the regulations if the manager is to have flexibility in setting a length limit. The equations would allow NMFS to calculate the maximum length limit allowable in the fishery under a given set of assumptions.

**Table 76 Area 2C Proposed maximum length limit under tiers 1 and 2.**

Tier	Combined Catch Limit (million lb)	Allocation	Charter Fishery Bag & Length limit Regulations		
			If charter harvest within allocation range	If charter harvest projected to exceed allocation range	If charter harvest projected to be below allocation range
1	<5	Comm alloc = 82.7% Charter alloc = 17.3% Charter range = 13.8-20.8%	One Fish 	Maximum length limit imposed that brings harvest to 17.3%	One Fish
2	≥5 - <9	Comm alloc = 84.9% Charter alloc = 15.1% Charter range = 11.6-18.6%	One Fish 	Maximum length limit imposed that brings harvest to 15.1%	Two fish, but one must be less than 32" in length

The Council did not specify which assumptions should be used in making the maximum length limit calculations. First amongst these issues was whether to assume that anglers would harvest the average fish caught under the length limit in previous years in the fishery or whether that anglers will high-grade every fish, up to the length limit. Empirical evidence suggests that the former method overestimated the effect of the management measure in the context of a two-fish bag limit in prior analyses, while the latter method is more likely to result in foregone harvests by the charter sector, because it is unlikely that every angler will be able to catch a fish exactly the length of the limit.

There likely would be a number of maximum lengths that meet the Council’s intent of reducing estimated harvest to below the stated target percentage for each method. The regulations should address how to account for decimal results; in most instances, length regulations have dealt in whole numbers and use inches as the measurement standard. The agency could chose to use centimeters, whole or otherwise, as

<sup>89</sup> This number changes with IPHC Area and Tier. In Area 2C this number is equal to 17.3 percent in Tier 1 and 15.1 percent in Tiers 2–4. In Area 3A this number is equal to 15.4 percent for Tier 1 and 14.0 percent for Tiers 2–4.

the measurement standard, but will need to balance issues such as foregone harvest, potential for harvest estimation error, and enforcement when deciding whether to use whole or decimal limits and whether to use inches or centimeters. As most federal fishing regulations use whole inches as the enforcement standard, this analysis developed the equations using whole inches and assumes that any “remainders” above a whole inch would be rounded down, as rounding up would violate the limit placed by the Council on the target charter sector allocation.

Assumption of High Grading to the Length Limit Equations: The following displays the equations necessary to determine the maximum length limit under which anglers could operate, and still stay at or under the Council’s prescribed share, if they were projected to harvest a given number of fish in a year. So, information which must be known before starting this calculation is:

- An established CCL for the upcoming year. This number will be provided by the IPHC.
- An estimated harvest for the upcoming year (i.e., the estimated number of fish anglers are likely to harvest under a one-fish bag limit).<sup>90</sup>
- The target allocation as established by the Council’s October 2008 action. This percentage is dependent on the CCL.

The following algorithm solves for the maximum length limit by using the IPHC length/weight equation for determining the maximum size in pounds.

*Maximum Length Limit Algorithm*

Step 1 
$$P_{max} = \frac{W_{max} \cdot H_p}{C_L}$$

Step 2 
$$P_{max} = \frac{6.921(10^{-6})L_{cm}^{3.24}H_p}{C_L}$$

Step 3 
$$\frac{P_{max} \cdot C_L}{H_p} = 6.921(10^{-6})L_{cm}^{3.24}$$

Step 4 
$$\frac{P_{max} \cdot C_L}{6.921(10^{-6})H_p} = L_{cm}^{3.24}$$

Step 5 
$$\ln \left[ \frac{P_{max} \cdot C_L}{6.921(10^{-6})H_p} \right] = 3.24 \ln L_{cm}$$

Step 6 
$$\frac{1}{3.24} \ln \left[ \frac{P_{max} \cdot C_L}{6.921(10^{-6})H_p} \right] = \ln L_{cm}$$

Step 7 
$$e^{\frac{1}{3.24} \ln \left[ \frac{P_{max} \cdot C_L}{6.921(10^{-6})H_p} \right]} = L_{cm}$$

Step 8 
$$e^{\frac{1}{3.24} \ln \left[ \frac{P_{max} \cdot C_L}{6.921(10^{-6})H_p} \right]} / 2.541 = L_{in}$$

Where:

$P_{max}$  = Maximum target charter harvest percentage

$W_{max}$  = Maximum allowable average weight under the length limit given the expectation of high grading to the limit

$W_{max} = W_{max}$  expressed as the IPHC length/weight equation =  $6.921(10^{-6})L_{cm}^{3.24}$

$C_L$  = Combined commercial charter catch limit in MLB

$H_p$  = Charter harvest projection (Number of fish)

$L_{cm}$  = Maximum allowable length in centimeters based on the IPHC length/weight equation

$L_{in}$  = Maximum allowable length in inches.

The following is a numerical example to illustrate the process as outlined above:

<sup>90</sup> This element was not defined in the Preferred Alternative. An estimate of the number of fish is a critical element in the equation; therefore, harvest should be estimated using *both* average weight and number of fish, as opposed to just total harvest weight.

Under a combined catch limit of 7.5 Mlb in Area 2C, charter anglers may harvest up to 18.6 percent of the limit. In a fishery with no size restrictions, they are likely to harvest 72,500 halibut, at an average weight of 19.5 pounds, for a total weight of 1.414 Mlb or 18.9 percent of the combined catch limit. This estimation triggers the step down function requiring the charter fishery to be managed to reduce its harvest to 15.1 percent of the combined catch limit; 15.1 percent of the combined catch limit with a harvest of 72,500 fish results in a required average weight of no more than 15.62 pounds. The equation must now solve for  $L_{in}$  using the combined catch limit, the target allocation, and the estimated 72,500 fish harvest. In this example the equation solves for a 35.97 inch fish (i.e., 91.40cm); a length that according to IPHC length/weight calculation corresponds to a halibut weighing 15.62 pounds. This weight multiplied by the estimated harvest of 72,500 fish would weigh 1.133 Mlb or 15.1 percent of the combined catch limit.

### New Information Since Final Action on Maximum Size Limits

The Council did not specify what the maximum length limit would be under tier 1 or tier 2 in its motion recommending the CSP. The Council contracted an analyst to prepare a supplemental analysis on the process for selecting a maximum length limit to manage charter halibut harvest in times of low abundance. In January 2009, the analyst presented a paper to the Council's SSC outlining two methods for projecting the average net weight of all halibut harvested by charter anglers. The analyst's paper can be found at: [http://www.alaskafisheries.noaa.gov/npfmc/current\\_issues/halibut\\_issues/HalibutCSPdisc709.pdf](http://www.alaskafisheries.noaa.gov/npfmc/current_issues/halibut_issues/HalibutCSPdisc709.pdf). The Council's SSC reviewed the paper and provided its recommendations to the analyst in February 2009.

The annual guided sport catch limit ( $C$ ) is the product of the guided sport (charter) sector allocation percentage specified in the CSP and the annual combined catch limit in pounds net weight established by the IPHC and expressed as equation 1:

$$C = CCL \cdot P_{max} \text{ (equation 1)}$$

where

$CCL$  = Annual combined catch limit in pounds net weight established by the IPHC for Area 2C and Area 3A, and

$P_{max}$  = Maximum percentage of the annual guided sport catch limit that is allocated to the charter sector, expressed as a proportion.

For example, for an annual combined catch limit of 6,000,000 pounds in Area 2C, the guided sport sector allocation is 15.1 percent. The catch limit for the charter sector would therefore be calculated as 6,000,000 pounds  $\times$  0.151 = 906,000 pounds.

For purposes of harvest estimation, ADF&G currently breaks each IPHC area into several subareas. ADF&G produces estimates of the number of fish harvested for each subarea, and then combines these estimates with size data from ADF&G creel surveys conducted at sites within the subareas. During creel surveys, ADF&G measures the length of harvested halibut and calculates a predicted weight for each fish in the sample using the IPHC length-weight relationship equation. ADF&G calculates average weight as the average of the predicted weights for each individual fish. The numbers of halibut of various sizes (size distribution) harvested by charter anglers vary by subarea. Because the magnitude of harvest also varies by area, ADF&G cannot simply combine creel survey data on the size of harvested halibut from all subareas to estimate total removals. Instead, ADF&G calculates guided sport halibut removals ( $R_p$ ) by subarea and sums them to obtain total removals as expressed in equation 2:

$$R_p = \sum_S H_{Sp} w_{Sp} \quad \text{(equation 2)}$$

where

$H_{Sp}$  = The estimated or projected number of halibut harvested by charter vessel anglers in each subarea  $S$ , and

$W_{Sp}$  = The estimated or projected average net weight in pounds of halibut harvested by charter vessel anglers in each subarea  $S$ .

This is the general form of the equation currently used for estimating charter removals. Variants of this general equation could be used to estimate the maximum length limit under the CSP, depending on the method selected to calculate the maximum length limit.

The supplemental analysis prepared for the Council's SSC in January 2009 noted that there are a number of methods that could be used to calculate a maximum length limit to restrict the total pounds of halibut harvested in the guided sport sector equal to or below the guided sport catch limit. The analyst assumed that the maximum length limit would be calculated as the length limit that would allow anglers to retain the largest halibut possible while limiting total guided sport harvest to a level equal to or below the annual guided sport catch limit.

The IPHC would base the CSP maximum length limit calculation in large part on ADF&G analyses and projections of guided sport harvest. The IPHC would use a projection of  $H_{Sp}$ , the number of halibut that will be harvested by charter vessel anglers in each subarea and an annual projection of total guided sport halibut harvest for Area 2C and Area 3A. The CSP would use the projection of guided sport harvest in net pounds for the upcoming year, assuming that charter vessel anglers would be subject to the default CSP restriction for the appropriate management tier. The CSP would specify the method for calculating the greatest maximum length limit in whole inches ( $L_{in}$ ) that produces a projection of guided sport removals ( $R_p$ ) that does not exceed the annual guided sport catch limit ( $C$ ).

The analyst developed two methods for calculating the length limit  $L_{in}$  for presentation to the Council's SSC in January 2009. The methods differ in their assumptions about how the size distribution of harvested halibut might change upon imposition of a maximum length limit.

Method A assumes that upon imposition of a maximum length limit the average weight of halibut harvested by charter anglers will equal the average weight of those fish that were equal to or less than the maximum length limit in a recent year in which anglers were allowed to harvest fish of at least that length. Use of size data from a recent year assumes that the size distribution of charter harvest from the recent year's sample is the best available data to describe the size distribution in the coming year in the absence of a size limit.

To project harvest using Method A, the IPHC would use ADF&G's calculation of the projected average weight ( $w_{Sp}$ ) for each subarea using length data from only those halibut sampled in the recent year that were equal to or less than the prospective maximum length limit. Using equation 2, these projections of average weight would then be combined with harvest estimates for each subarea ( $H_{Sp}$ ) to obtain a projected guided sport removal under each prospective length limit. For example, to evaluate guided sport removals resulting from a size limit of 40 inches, the average weight of only those harvested halibut that were equal to or less than 40 inches in length in the sample from the most recent year would be calculated. After repeating the calculations for a range of maximum length limits, the IPHC would adopt the largest size limit  $L_{in}$  in whole inches that results in a projected guided sport removal ( $R_p$ ) that is less than or equal to the annual guided sport catch limit ( $C$ ).

Method B assumes that every halibut harvested and retained by charter vessel anglers would be precisely equal in length to the maximum length limit. Because all fish are assumed to be the same length, there would be no differences in the projected size distributions between subareas of each regulatory area. The IPHC would use the average weight that, when multiplied by the projected number of fish harvested in the entire IPHC regulatory area, would result in the annual guided sport catch limit ( $C$ ) for that area as expressed in equation 3:



$$C = H_p w_p \quad (\text{equation 3})$$

where

$H_p$  = The estimated or projected number of halibut harvested in Area 2C or Area 3A, and

$w_p$  = The average net weight in pounds of all halibut harvested by charter vessel anglers in Area 2C or Area 3A.

The CSP would then use the IPHC length-weight relationship equation to solve for the maximum length limit  $L_{in}$  corresponding with the average weight  $w_p$ . The current IPHC length-weight equation relates net weight in pounds ( $W$ ) to length in centimeters ( $L_{cm}$ ) and expressed in equation 4:

$$W = 6.921(10^{-6})L_{cm}^{3.24} \quad (\text{equation 4})$$

To obtain the maximum length limit under Method B, the CSP would substitute equation 4 for  $w_p$  in equation 3, solve for  $L_{cm}$ , then convert and round down to the nearest whole inch, which would be the maximum length limit in effect ( $L_{in}$ ). If the IPHC were to modify this length-weight relationship equation or its parameters, the CSP would use the revised equation recommended by the IPHC.

For example, if the annual combined catch limit ( $CCL$ ) was set by the IPHC for Area 2C at 6,000,000 pounds, the guided sport allocation would be 15.1 percent, and the guided sport catch limit would be 906,000 pounds (equation 1). If projected guided sport harvest for the coming year ( $H_p$ ) was 50,000 halibut, then the average net weight ( $w_p$ ) could not exceed 18.12 pounds (equation 3). The length that results in a predicted average net weight of 18.12 pounds is 95.69 cm, or 37.67 inches (equation 4). The maximum length limit would therefore be rounded down to the nearest whole inch and set at 37 inches.

In January 2011, the IPHC used Method B when it recommended a maximum length limit for the 2011 fishery for charter vessel anglers harvesting halibut in Area 2C. The Secretary of State and the Secretary approved the IPHC's recommendation (76 FR 14300, March 16, 2011) and charter vessel anglers in Area 2C are limited to catching and retaining one halibut per calendar day that is no longer than 37 inches. Following the IPHC's recommendation, charter sector stakeholders commented to NMFS that the IPHC's use of Method B was too conservative because it assumes that all charter vessel anglers would be able to harvest precisely a halibut of the maximum size limit. This likely would not occur and some anglers will harvest halibut smaller than the maximum size limit. The charter sector stakeholders suggested that it might be possible to use a less conservative methodology than Method B that would result in a relatively larger maximum length limit while limiting guided sport harvest to target levels.

In response to requests from guided sport sector stakeholders, ADF&G used an alternative method to calculate the maximum size limit. This additional method, referred to as Method C in this analysis, combines the assumptions used in Methods A and B to produce an intermediate result. Like Method A, Method C would be used to calculate a maximum length limit using data from a previous year in which the guided sport fishery was not constrained by a length limit, or a year in which a less constraining (higher) maximum length limit was in place to manage the guided sport fishery under its allocation.

Method C assumes that under a size limit in the coming year, (a) the proportion of the harvested halibut that will be smaller than the prospective maximum length limit will equal the proportion that were under that length in the previous year, (b) the average weight of fish smaller than the prospective maximum length limit will remain unchanged from the previous year, and (c) the portion of the previous year's harvest that was larger than the prospective maximum length limit will be exactly equal to the length limit in the coming year.

The Method C calculations would proceed as follows. For each prospective maximum length limit  $L_{in}$ , the CSP would use the proportion of the halibut in the previous year harvest sample that were less than or equal to the size limit, and the average weight of those fish. The average weight of the remaining portion of the harvest would be assumed to be equal to the average weight of halibut of length  $L_{in}$ , predicted from

the IPHC length-weight relationship (equation 4). Guided sport removals would be calculated for prospective length limits using equation 2, with the average weight for each subarea  $w_{Sp}$  calculated as follows:

$$w_{Sp} = (p_{UL}w_{UL}) + (p_{OL}w_{OL}) \quad (\text{equation 5})$$

where

$p_{UL}$  = the proportion of halibut in the previous year's creel survey sample from subarea  $\underline{S}$  that were less than or equal in length to the prospective length limit  $\underline{L}_{in}$ ,

$w_{UL}$  = the average weight of halibut in the previous year's creel survey sample from subarea  $\underline{S}$  that were less than or equal in length to the prospective length limit  $\underline{L}_{in}$ ,

$p_{OL}$  = the proportion of halibut in the previous year's creel survey sample from subarea  $\underline{S}$  that were greater in length than the prospective length limit  $\underline{L}_{in}$ ,

$w_{OL}$  = the average weight of halibut of prospective length limit  $\underline{L}_{in}$ , predicted from the IPHC length-weight relationship equation (equation 4), and

$$p_{UL} + p_{OL} = 1.$$

The IPHC would then select the largest size limit  $L_{in}$  in whole inches that results in a projected charter removal ( $R_p$ ) that is less than or equal to the annual guided sport catch limit ( $C$ ).

For example, if calculating the average weight corresponding with a 40 inch maximum length limit, the CSP would use, for each subarea, the proportion of fish in the previous year's sample that were less than or equal to 40 inches in length, and the average weight of only those fish. Suppose that 70 percent of the fish in a subarea were less than or equal to 40 inches in length and those halibut had an average net weight of 13.0 pounds. The remaining 30 percent of the harvested fish would be assumed to have an average net weight of 22.0 pounds (from equation 4). In this example, the average weight for this subarea would be calculated as  $(0.70 \times 13.0) + (0.30 \times 22.0) = 15.7$  pounds.

Each of the methods for calculating the maximum length limit requires the use of specific assumptions for determining an average weight of halibut harvested in the guided sport fishery when anglers are limited to retaining one halibut that is no larger than the maximum length limit. The projected average weights determined by using these assumptions likely will not precisely equal the actual average weight of halibut harvested in the guided sport fishery under the maximum length limit. Method A and Method C assume that at least a portion of the halibut caught in the guided sport fishery in a future year will have the same average weight as halibut harvested in a previous year. If the CSP uses Method A or Method C and charter vessel anglers are able to increase the average size of halibut caught and retained under the maximum length limit relative to the previous year's harvest, calculation of the maximum length limit using the previous year's average size will result in underestimated guided sport harvest. This underestimated harvest will result in a calculated maximum length limit that is larger than the length limit that would be implemented under the larger average size of halibut. This relatively larger maximum length limit could result in the guided sport sector exceeding its catch limit. Conversely, if the average size of halibut caught and retained under the maximum length limit is lower than the average from the previous year's harvest, the maximum length limit calculated under Method A or Method C will result in overestimated guided sport harvest and a calculated maximum length limit that is smaller than the length limit that would be implemented under the smaller average size of halibut. Guided sport harvest may not reach the sector allocation under this relatively smaller maximum length limit.

Anglers may have the ability to increase the average size of halibut caught and retained under the maximum length limit by highgrading, or releasing smaller fish in order to retain larger fish. However, the ability of anglers to highgrade also depends on the availability of larger fish, which could change with natural variations in halibut stock composition, movements of fish, and the ability of the fleet to find or

access areas where those fish are. Variability was observed in estimated average weights in the Area 2C guided halibut fishery even before bag limit changes were first enacted in 2007. Variability can be caused by a number of factors, including bias and sampling error in the collection of size data through creel surveys. It is not yet possible to accurately predict the amount or effect of highgrading based on average weight data. It is reasonable to assume, however, that imposition of a maximum length limit or a decrease in the maximum length limit may provide more incentive for anglers to retain the largest fish possible, and the assumption used in Method A that all halibut retained by guided sport anglers will be of the average size fish previously caught in the fishery may not be realistic.

On the other hand, Method B assumes that all halibut harvested in the guided sport fishery would be equal to the maximum length limit when anglers are limited to retaining one halibut that is no larger than a maximum length limit. Method B would likely overestimate guided sport harvest, however, because it is highly unlikely that all anglers would be able to catch and retain halibut that are precisely equal to the maximum length limit. Some anglers will undoubtedly retain halibut that are smaller than the maximum length limit, and guided sport harvest in net pounds will not always reach the projected guided sport harvest used to determine the maximum length limit under Method B. The overestimation of average weight using Method B would increase as the maximum length limit increases. The maximum length limit calculated under Method B would result in the most biologically conservative outcome among the three methods because it would result in a smaller maximum length limit than the limits that would result from using Methods A and C.

Method C assumes that a portion of the halibut harvested by guided sport anglers under the maximum length limit will be the average size previously caught in the fishery, similar to Method A. As described for Method A, this could result in underestimated harvest for that portion of the halibut harvest if anglers are able to highgrade and increase the average weight of halibut harvested relative to the previous year. However, Method C uses the most biologically conservative Method B assumption for the remaining portion of halibut harvested in the previous year's fishery. Method C assumes that the portion of harvested halibut that were larger than the maximum length limit in the previous year would be equal to the maximum length limit for purposes of projecting guided sport harvest under the maximum length limit. As described for Method B, this could result in overestimated harvest for that portion of the halibut harvest. The net effect is that using both assumptions in Method C may balance the effects of Methods A and B. Method C will result in maximum length limits and projected guided sport harvests that are between those calculated using Methods A and B. Method C is likely to be less biologically conservative than Method B. Method C is likely to be more biologically conservative than Method A, especially when the daily bag limit is changed from one halibut of any size to one halibut with a maximum length limit, because anglers are presumed to already be highgrading under a one halibut of any size daily bag limit.

The consequences of projection errors vary by methods also. In January 2009, the Council's SSC noted that Method A would be expected to produce the least impact on the guided sport industry but the most impact on the halibut resource. Underestimated guided sport harvest due to changes in angler behavior under Method A could result in actual guided sport harvest exceeding the guided sport catch limit. While Method B uses a conservative approach by assuming that all charter vessel anglers will highgrade to the maximum length limit, it increases the likelihood that guided sport harvest will not reach the sector's catch limit because not all anglers will be able to highgrade to the maximum length limit. The SSC noted that the biologically conservative assumption used under Method B could result in an undesirable economic loss to the guided sport industry and a loss of opportunity to charter vessel anglers because the maximum length limit would be smaller than limits calculated using less biologically conservative assumptions. Method C balances the impacts of Method A and B on the halibut stock and guided sport fishery participants because it applies the assumptions used in both Method A and Method B.

The SSC suggested that the CSP could use an iterative approach to calculating maximum length limits for a few years in order to accommodate new information on angler behavior under maximum length limit

restrictions. However, this suggestion is inconsistent with the Council's intent that the CSP would establish non-discretionary CSP restrictions for charter vessel anglers prior to the fishing season.

The CSP could use Methods A, B, or C to set maximum length limits when guided sport harvest is being constrained under the CSP management tier 1 or tier 2. This would include scenarios in which a one halibut of any size per day bag limit is already in place and a maximum length limit is enacted for the first time, or a maximum length limit is in place but needs to be reduced because of a decline in the annual combined catch limit. However, neither Method A nor Method C would likely be appropriate for use in the situation where a maximum length limit has been in place for several years but needs to be increased due to an increase in the annual combined catch limit. These methods would require modification since there would not be recent information with which to predict the catch of fish in the gap between the original size limit and the new size limit. Method B could be applied to the proportion of the fish that were greater than the original size limit in these situations. If Method B were applied to all fish in year following a size limit produced using Methods A or C, use of the more conservative Method B could result in a decrease in the size limit even though the annual combined catch limit increased.

#### Economic Effects of Maximum Size Limit

The following discussion evaluates the economic impact of maximum fish size limits in Areas 2C and 3A. This analysis is largely qualitative. A more quantitative analysis is precluded by lack of information about the economics of these fisheries. In particular, there is little recent information about the impact of a fish size restriction on guided halibut charter demand or consumer welfare, on the economics of guided charter, and other sport halibut related, operations, and on the way that these operations are integrated into regional economies. An impact analysis would require an ability to predict the impact of a change in fish size limits on demand for halibut fishing and the number of trips that would have been demanded in a given year, the impact of this change on direct revenues earned by businesses serving anglers, and the secondary impacts created by spending by those businesses and by their employees.

There is some information covering the last link in the chain: the connection between direct revenues earned by firms, and secondary impacts in the economy. Seung and Waters (2007) reviewed economic impact studies relevant to Pacific halibut fisheries in Alaska. Herrmann et al. (2001) and Criddle et al. (2003) used the information gathered in a 1997 survey of Lower Cook Inlet anglers (see below) to simulate the impacts on participation of changes in fishery characteristics, and input the simulation results into an input-output model of the Lower Cook Inlet regional economy to examine economic impacts. The McDowell group used input-output multipliers to examine the relationship between charter industry and the Sitka economy (McDowell Group 2005). A 2010 paper by Lew and Seung draws on the survey research described in Lew, Lee, and Larson (2010, see below), and investigates the relationship between changes in non-resident demand for guided sport charters, and regional impacts (Lew and Seung, 2010) using a computable general equilibrium model of Alaska. There is some recent information about the relationship between the sport fishing sector and the regional economy available from a 2008 ADF&G sponsored study (Southwick Associates et. al., 2008), but this is primarily descriptive and does not lend itself to impact analysis. The NMFS Alaska Fisheries Science Center (AFSC) is beginning a research project into the relationship between the fishing sectors and the Southeast Alaska economy, but this will not be available in time for this analysis (NMFS, 2011).

These impact models estimate impacts on jobs and income by the place where the job is located and not by place of residence of the person holding the job and earning the income. Thus, until better data becomes available on nonresident labor and earnings for a base year in each industry, it is difficult to estimate local resident impacts alone. It is likely that significant amounts of capital and labor are owned or provided by persons who live outside of Alaska. Another serious problem is the lack of models providing the first links in the chain described above: demand models capturing the impact of a change in a maximum halibut size limit on the demand for different types of halibut fishing and consumer welfare,

and making it possible to estimate the consequent impact of changes in demand for guided charter, and other fishing businesses.

The demand for sport fishing in Lower Cook Inlet was studied by a team of economists from the Universities of Alaska and Utah, and the National Marine Fisheries Service, using data collected in a 1997 survey. The final report was published in 2001 (Herrmann et al. 2001); Criddle et al. (2003) provides an overview. Information from a 2007 AFSC survey of sport fishermen is becoming available. A summary and description may be found in Lew, Lee, and Larson (2010). The AFSC is developing a follow-up sport angler survey, but information from this will not be available for this analysis (Lew, pers. comm.)<sup>91</sup>. In general, the available research is either dated, not yet completed, or did not gather information on the impact of maximum fish size regulation on demand and participation in a way that is readably usable for a quantitative impact analysis.

Thus, the discussion that follows is qualitative, and is organized around discussions of impacts on (a) guided sport charter customers, (b) guided charter operations, (c) supported, but not guided, sport fishing operations,<sup>92</sup> (d) independent sport fishermen, (e) commercial halibut fishermen, (f) subsistence halibut fishermen, and (g) Southeast Alaska fishing communities.

The size of halibut an angler can expect to catch is an important attribute of a saltwater sport fishing charter trip. By placing an upper limit on the size of halibut that may be harvested, this action should tend to decrease the demand for guided sport fishing. In some instances, persons who would have purchased a sport fishing charter will redirect their spending to non-fishing goods and services; in other instances, spending will be redirected to other sport fisheries, or to other methods of sport fishing for halibut, such as supported halibut fishing.

The research described by Herrmann et al. and Criddle et al. indicated that the characteristics of a halibut fishing trip, including the weight and number of halibut caught, affected demand for trips in Lower Cook Inlet. Recent research by economists at the AFSC also confirms that attributes of halibut fishing trips, including the number of halibut caught (irrespective of retention), and the size in pounds of the average halibut caught, have a statistically significant relationship to the utility provided to a resident of a state other than Alaska by a saltwater fishing trip<sup>93</sup>. The AFSC evidence suggests that the practical impact of the halibut size variable is relatively modest. Moreover, the evidence suggests that the regulations governing a fishing trip can have an impact on trip utility comparable to or greater than actual harvest outcomes. Thus, it is possible that even if the proposed action did not change the number of fish caught or the size of the fish caught, it could still reduce trip utility. (Lew and Seung, 2010: 547).

The analysis does suggest that the impact on participation associated with some regulatory changes might be modest. A simulation in which a halibut bag limit was reduced from two halibut to a catch and release fishery only led to a 3.19 percent reduction in non-resident saltwater fishing participation<sup>94</sup>. (Lew and Seung, 2010: 547). On the other hand, evidence from Area 2C harvests suggests that the impact of regulatory changes may be significant. In 2008, an estimated 98,663 bottomfish anglers participated in guided charter fishing in Area 2C; in 2009, the first full year with the one halibut bag limit, this dropped to 70,284 (ADF&G, 2010: 2). It is not possible to ascribe this 29 percent reduction in participation entirely to the reduction in the bag limit. The 2007-2009 recession, intensified by the financial crisis of September 2008 (after most of the 2008 season), is also likely to have played a part.

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<sup>91</sup> Dr. Dan Lew, Alaska Fisheries Science Center. Email dated May 4, 2011.

<sup>92</sup> By “supported” sport fishing is meant operations that supply a boat, gear, fishing advice, and perhaps other services, such as lodging, but in which a guide does not accompany the sport anglers on the fishing boat.

<sup>93</sup> The analysis is focused on non-residents and has nothing to say about residents.

<sup>94</sup> This percentage reduction in participation assumes all other factors (including the price of a trip) remain constant. In fact, if participation at each price dropped, and the supply curve was upward sloping, the price itself would have tended to drop, tending to reduce the actual decline below 3 percent.

The net impact of the size limit on consumers should be fewer purchases of guided saltwater sport fishing trips and less satisfaction from the trips that are taken. Consumer welfare, measured by consumers' surplus, should be reduced, although it is not possible to estimate the size of the change with current information about demand for guided sport fishing trips.<sup>95</sup>

A decrease in the demand means that at any price, sport anglers would demand fewer guided charters. This will tend to reduce the price paid for guided sport charters. The size of the price change will depend on the position of the guided charter supply curve. If supply can be increased or decreased with little impact on the cost of providing additional fishing trips, the impact on trip price may be fairly small. If trips can only be supplied with strongly rising costs, the impact on the price of trips may be larger.<sup>96</sup>

There are significantly different business models within the guided charter sector. Some individuals operate a small boat, taking cruise ship passengers on half-day trips. Others operate one or more vessels in conjunction with on-shore facilities, such as bed-and-breakfasts and lodges, offering full-day trips on multiple days. Some operators may take clients on multi-day cruises. Some operators, particularly in Area 3A, operate large party boats capable of carrying tens of anglers. The supply curves for the different business models may be different. NMFS (2008) suggested that the supply curve for a half-day trip may be relatively flat, reflecting an ability to add or subtract trips, with small changes in the trip costs (NMFS, 2008: 34). If so, the price impact could be relatively modest. However, most half-day fishing trips supplied to cruise ship clientele in Area 2C, are pre-sold through the cruise-line, bundled with other shoreside activities, and "booked" in advance of the actual fishing excursion. Because charters must be precisely coordinated with cruise ship port-of-call arrival and departure schedules, any opportunity to make within-season price changes and/or other than 'marginal' changes in supply (e.g., rapidly adding large numbers of charter seats) is severely constrained. (Queirolo, pers. comm.)<sup>97</sup> The conditions of supply and the potential for price impacts for other business models are likely to be more complex (NMFS, 2008: 36).

The opportunity to take halibut is an important (albeit not the only) factor affecting the demand for guided saltwater sport charters. If the regulations on halibut harvest become more restrictive, sport guides may place increased emphasis on targeting other species, such as salmon, rockfish, or ling cod, or emphasize other types of nature excursions. The scope to substitute other species can vary over the season with natural cycles of availability. Some Area 2C lodge owners have reported in the past, for example, that they are more dependent on halibut in July, between the Chinook and silver salmon seasons (Council, 2008: 131). More restrictive regulation will reduce the profitability of this sector and the economic viability of unknown numbers of guided charter operators may be placed in doubt. Guided fishing charters book much of their business up to a year in advance of the fishing season. A change in fishing regulations in the winter or spring prior to the season, after much of the season's business has been booked, may increase client uncertainty about the nature of halibut fishing opportunities in future booking seasons, adversely affecting future prices guided charter operations may receive.

Conversely, the demand for and supply of supported, rather than guided, halibut fishing excursions may tend to increase. Operations which provide boats, gear, and advice, but not on-board guides, are a substitute for guided charters, and have a two fish bag limit, without a size restriction (75 FR 13027; 50 CFR 300.65). Interest in this mode of fishing may increase, as the size limit makes guided saltwater charters less attractive. The extent to which the supply of supported halibut fishing trips would expand to

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<sup>95</sup> Consumers' surplus is used here as a proxy for more precise measures of consumer welfare such as willingness to pay.

<sup>96</sup> This follows from basic supply and demand theory. If the costs of additional trips change little, the supply curve will be relatively flat and shifts in the demand curve will have little impact on price. If the supply curve is steeply sloped, a change in demand will move the price more dramatically.

<sup>97</sup> Dr. Lewis Queirolo, Regional Economist. NMFS Alaska Regional Office. Personal communication, February 15, 2011.

meet a one-year shift in demand is unclear. Any expansion in the supported fishing sector could offset potential reductions in halibut harvest associated with the restrictions on the guided charter sector, as unguided clientele would be bound by the general sport fishing regulations and bag limits (e.g., two halibut per day, no size limit). However, unguided anglers would presumably have lower success rates than guided anglers.

Independent halibut fishing trips are another substitute for guided halibut fishing for persons with access to boats, gear, and local knowledge – either their own or that of friends and relatives. For example, local persons, who may have splurged on a guided charter in addition to their own independent fishing, may substitute more independent fishing. Independent fishermen are subject to a two halibut bag limit without a size restriction (75 FR 13027; 50 CFR 300.65). Again, any expansion in independent halibut fishing would offset potential reductions in halibut harvest associated with restrictions on the guided charter sector.

In Area 2C, the percentage of sport halibut taken by persons who were not on guided trips tended to decline over the period 2000 through 2006, and then to rise in each year from 2007 to 2010. The fishery had a two halibut bag limit from 1995 to 2005. A limit on guide and crew harvests was introduced in 2006. More restrictive regulation of guided charter customers began in 2007, with the introduction of a 32 inch maximum size limit on one of the two halibut, shortly after the start of the 2007 season. The proportion of the sport harvest taken by guided fishermen began to decline in 2007 (calculation from data supplied by Williams, pers. comm.)<sup>98</sup>. This result suggests, but not conclusively, that increased regulation has prompted anglers to substitute non-guided trips. The aggregate sport harvest and the sport harvest by guided anglers, both actually increased in 2007, the year the size limit was introduced, and then rose again the following year.

Commercial longline fishermen, subsistence fishermen, guided sport fishermen, and sport fishermen without guides, all compete for access to halibut stocks. GHL overages can lead, over time, to reduced allocations for commercial fishermen, if available yield remains unchanged or declines. Exploitable biomass and Total CEY can be reduced by past GHL overages, leading to reduced Fishery CEY and commercial catch limits. Harvest increases by subsistence fishery, and supported or independent sport fishermen, can have the same effect on commercial fishermen. The Council, however, has not created harvest limits for these groups. Moreover, if the IPHC has based its Fishery CEY calculations on an assumption that the guided charter harvest will not exceed the GHL, and the GHL is subsequently exceeded, then the IPHC target harvest rate may be exceeded (as long as other removals, such as commercial catch, waste, PSC, and bycatch, etc., remain unchanged in response to that excess harvest). This is another mechanism that can reduce future harvests for other sectors. On balance, therefore, this alternative would tend to provide benefits to commercial longline, subsistence, and unguided sport fishermen. Finally, some are concerned that guided charter harvests can contribute to localized depletion, reducing commercial longline and subsistence catch per unit of effort in attractive fishing areas, and requiring commercial and subsistence trips to less attractive areas (75 FR 569; various comments and responses). The scientific evidence on the potential for sustained localized depletion remains inconclusive (75 FR 568, *January 5, 2010*).

Many sport fishermen, guided charter operators, supported charter operators, and independent sport fishermen, commercial longliners, and subsistence fishermen, live in, or make purchases in, communities in Southeast and South Central Alaska. Many businesses are based in these areas, and/or make many of their purchases from local Alaska businesses and persons. Commercial operations may deliver halibut for local processing and distribution. Southeast and South Central Alaska communities can form Community Quota Entities (CQEs) capable of holding halibut individual fisherman's quota (IFQ), as well as community guided charter permits, that allow them to encourage businesses to base at least part of their operations in the local community (NPFMC, 2010a: 5) . Many of these communities are very small

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<sup>98</sup> Gregg Williams, International Pacific Halibut Commission. Email, January 14, 2011.

places in which fishing, including various types of halibut fishing, play an important role. Thus, actions that affect the halibut fisheries in Areas 2C and 3A have local community impacts. However, the net community impact of an action affecting guided charter halibut customers is difficult to identify given: (a) the dependence of communities on several of the halibut harvesting sectors, (b) the difficulty of quantitatively identifying the impacts of the action on different harvesting sectors, and (c) the lack of information about the interaction between harvesting sectors and local communities.<sup>99</sup>

Lew and Seung examine the regional employment and income impacts associated with changes in the attributes of guided halibut fishing trips. In general, they found that statewide impacts from this source would be relatively modest, although they recognized that impacts could be significant for communities dependent on the halibut resource. They note that the aggregate impact is affected by several factors. Anglers can shift effort from targeting species that become subject to more restrictions to targeting other species; the Alaska economy is small and heavily dependent on imports and, thus, there is a large “leakage” of spending outside of the economy. They also note that “ownership by out-of-state entities also contributes to leakages. This may be particularly pronounced in certain regions of the state, such as Southeast Alaska, where much of the income from the sportfishing charter sector leaks out of the state because a substantial portion of the charter vessels is owned and operated by nonresidents.” Moreover, they note that “cruise operators in Southeast Alaska, which are mostly owned by foreign residents, exact payment from local businesses who sell their services aboard the vessels. This expropriation of rent represents a leakage of revenues from the sportfishing service industry to foreign-owned cruise operators...” (Lew and Seung, 2010: 549).

A limit on the size of halibut that may be taken would be difficult to enforce in the absence of provisions that would require guided charter operations to retain the carcasses until the halibut are offloaded at the dock. If guided sport fishing operations could fillet halibut at sea and discard the carcasses, effective enforcement would be difficult, intrusive, and expensive, and may, in fact, be impossible. A prohibition on filleting/mutilating/heading halibut until the halibut is offloaded from the vessel would be preferable to a carcass retention requirement, as carcass retention is a less certain way to definitively establish length of retained halibut. But, a carcass retention requirement is probably less controversial and more palatable to the harvesters, and a management measure that enforcement personnel can implement. A carcass retention requirement and the current prohibition on filleting/mutilating halibut to no less than 2 ventral pieces, 2 dorsal pieces, and 2 cheek pieces with skin on all pieces will assist in enforcing size limits because an officer could (presumably) be able to match fillets to a carcass relatively easily. (Antaya)<sup>100</sup>

The other issue that may occur with a maximum size limit is increased high-grading or discarding smaller retained halibut in favor of a larger halibut. Regulations which state that a fish will be applied to the bag limit of the person catching it, unless it is returned to the sea immediately and with minimal injury, make highgrading illegal as a practical matter. But this is difficult to enforce. A barbless hook requirement would assist guides and anglers in carefully releasing halibut that are over the size limit with a minimum of injury. Enforcing a barbless hook requirement is problematic unless a halibut is brought onboard a vessel while enforcement personnel are watching or unless all hooks onboard a vessel are barbless. (Antaya)

NOAA Office of Law Enforcement (NOAA OLE) doesn't currently have the resources to adequately address a maximum size limit. NOAA OLE would likely seek assistance from the USCG and the Alaska Wildlife Troopers to enforce the size limits, particularly in more remote locations. In addition, it would be desirable for NOAA OLE to temporarily detail NOAA Officers and Agents from outside of the affected

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<sup>99</sup> The NMFS Alaska Fisheries Science Center is beginning a research project to improve the information on the interaction between the Southeast fisheries and the regional economy. (NMFS, 2011)

<sup>100</sup> Ron Antaya, Assistant Special Agent in Charge, NOAA Office of Law Enforcement, Alaska Regional Office. Email, January 4, 2011.



areas to help enforce size limits. This may not be possible given the current Federal budget situation. (Antaya)

A retention requirement would increase the number of carcasses brought back to the dock; especially in ports where operators typically fillet their halibut at-sea. In harbors that do not currently allow the dumping of fish carcasses in the harbor, and/or harbors where there is no infrastructure (e.g., floating dumpsters, grinders) to deal with fish waste, charter operators may have to transport fish carcasses out to sea where they can be dumped. The cost of transporting halibut carcasses would be borne mainly by the charter fleet, who would seek to pass those costs on to their customers, to the extent allowed by the marketplace. It is not uncommon for guides who make daily trips to retain carcasses overnight in a tote onboard the vessel and discard them at sea on their way out to fish the following day. Some even use part of the carcass as bait the following day. Guides that do not fish daily are more challenged with properly discarding carcasses in a manner that does not create issues for others. (NMFS, 2007: 39; Antaya)

Some ports currently do not have a prohibition against discards. The regulatory requirement to retain halibut carcasses may increase the amount of fish offal discarded at the dock. In these instances, carcass retention may create sanitation problems and conflicts with wildlife, particularly sea lions. Individual harbors would need to determine if a fish offal policy is warranted, including its associated costs. If discarding of offal in the harbor is prohibited, the costs will be borne by the charter operator, and to the extent possible, his clients. If the harbor provides services, at no direct cost to the user, such as the removal of offal, the costs would be spread out beyond the operator. (NMFS, 2007: 39; Antaya)

## **Guided Angler Fish Program**

**The Council adopted eight specific provisions (lettered A through H) that define its Preferred Alternative for a Guided Angler Fish program.** Only two of the provisions had options from which the Council selected its preferred option. Six provisions are simply statements of Council intent.

This section addresses the unique features of the two options selected by the Council that distinguish the Preferred Alternative from Alternative 2. Under Provision A, the Council identified a limit on the number of halibut that a charter operator may assign to an LEP. Charter operators would be limited to assigning 400 or fewer GAF to each LEP that is endorsed for 6 or fewer clients. If an LEP is endorsed for more than 6 clients, a maximum of 600 GAF may be assigned for use with that permit. Linking the limits to a total number of GAF, instead of a number of IFQ pounds, eliminates fluctuations in the limit when the average halibut weight changes. It also provides stability, because the charter LEP holders know in advance the maximum number of GAF that may be assigned to an LEP.

Recall that LEPs are allowed to be stacked on a vessel to maximize efficiency by allowing an increase in the number of anglers a vessel may carry. Therefore, more than one LEP could be onboard a vessel at any one time. If an LEP is on a vessel that has room under the GAF cap, and the harvest is assigned to that LEP in the logbook, the charter operator could allow clients to retain GAF, even if another LEP on the vessel has reached its cap. It is important not to differentiate between caps on LEPs and vessels. When two LEPs are on a vessel for the purpose of carrying more than 6 clients, the cap is not set at 600 GAF for the vessel. The cap is 400 GAF for each of the LEPs on the vessel, with no more than 400 GAF assigned to an individual LEP.

If the combined catch limit is large enough to allow clients to operate under the same bag limits as unguided anglers, there would be no incentive for charter LEP holders to lease quota from commercial IFQ holders. In this scenario, leasing GAF would not provide any benefits to their charter clients and would increase the cost of operation. Because bag limits are set at the beginning of the year and are not changed in-season, charter LEP holders would know before the start of the season if there is any need to lease GAF. Based on the projections of future combined catch limits, it appears that leasing is more likely to need to occur in Area 2C. These charter anglers are projected to be under the Trigger 2 one-fish bag

limit. In Area 3A, the charter sector is projected to be under Trigger 4 two-fish bag limit through 2015, so there would be no incentive for LEP holders to lease GAF.

From a purely economic perspective, the commercial sector's willingness to lease to the charter sector depends on the lease price, relative to the net price the commercial sector receives at the dock. Assuming profit maximizing behavior, when the lease price is greater than or equal to the net profit they generate from harvesting the halibut, they would be willing to lease IFQ. Other factors outside of the company's bottom line in a year may impact an IFQ holder's decision to lease IFQ. Factors such as crew employment, relationships with the charter sector, agreements with processors, or enjoyment derived from fishing are a few of many possible reasons that may affect decisions on whether to lease IFQ. Each IFQ holder would employ his/her own criteria when determining whether to lease some or all of available IFQ to the charter sector. These relatively small amounts of IFQ are also in demand by new commercial IFQ entrants (i.e., crew).

During public comment at the October 2008 Council meeting, several charter sector representatives were asked if they thought leasing would occur, if allowed to do so. Some charter operators expressed concern regarding the commercial sector's willingness to lease halibut to them. They stated a variety of reasons that included tensions that exist between the sectors, insufficient QS on the market, insufficient capital to lease the IFQs (especially smaller charter operations that are not associated with lodges), and uncertainty regarding the willingness of clients to pay extra to use GAF. Several commercial QS holders also were asked if they would be willing to lease halibut to the charter sector. Many indicated they would be willing to lease IFQ to the charter sector if it would help resolve the ongoing conflict between the sectors. Based on public testimony, it seems as if some IFQ would be made available to lease. Projections of the number of GAF that may be needed have been provided in section 2.5. Based on public testimony, it is not possible to estimate the total amount or market price, of GAF that would be made available in each area.

Provision E would allow GAFs to revert back to the commercial sector at the written request of the GAF holder. The Council did not stipulate that commercial LEP holders that leased IFQ to the charter sector could refuse to take the IFQ back. Because the GAF is returned at the request of the charter operator, if the IFQ holder is concerned about getting the IFQ returned during the season, they would need to structure terms of the reversion in the private lease contract. In that contract, they could specify the terms and conditions of reimbursement that LEP holder would receive for returning GAF. Each contract could be structured to ensure that the buyer and seller agree to terms of the reversion. The proposed rule would address this issue in more detail. Had the Council not selected Provision E, then there would be no reversion provision and the lease agreements would become a temporary, one-way transfer that would expire at the end of the calendar year. The Council's Preferred Alternative identified November 1 as the date by which all unused GAF automatically would revert the commercial IFQ holder. Without specific language regarding compensation in the contracts, charter operators could lose the value of the GAF that is returned. Because the return of the IFQ is automatic and required in regulation, the charter operators may not have sufficient bargaining power to leverage a "fair" price for returned GAF. Unused GAF also may be returned to the IFQ holder prior to November 1, if the GAF holder submits a written request. The Council did not stipulate any circumstance wherein the IFQ holder can request the GAF revert to IFQ.

The preferred alternative is projected to limit Area 2C charter anglers to a one-fish bag limit through 2015. This provision would allow clients of charter LEP holders who use GAFs to return to historical daily bag limits, (presumably) for a fee, in Area 2C. GAF would not be expected to be used in Area 3A, until the regulations are more restrictive on charter anglers than on non-guided anglers.<sup>101</sup>

Because a client must book a trip with an LEP holder that holds GAF if the wish to fish under restrictions in place for unguided anglers, and they must be willing to incur any additional expense of using GAF that

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<sup>101</sup> The allocations under consideration are not a hard-cap within any specific season, so GAF would not come into play unless the charter sector "exhausted" the common pool in any given season and other restrictive management measures were not already in place.

the LEP is able to pass along, only a subset of the client population would benefit from the program. Charter anglers who are unable to book a trip with an LEP holder that has GAF available, or are unwilling to incur additional fishing costs, would continue to be bound by the one-fish bag limit expected to be in place in Area 2C. Those anglers would not derive any benefit from the GAF program.

**Council Statement in Support of its Preferred Alternative:** In addition to identifying its selection of elements and options in its Preferred Alternative, the Council's motion also provided its rationale as to why it was important to include leasing of commercial IFQs as GAFs, after it selected its initial allocation between the sectors. The Council's first point was that a market based system was supported by the SSC and academic literature. The SSC indicated that a "market-based transferrable system is the only practical way to approach an optimal allocation over time." Noting that the initial allocations in Area 2C are unlikely to meet the precise needs of either sector, a provision for a market-based reallocation was thought to increase the probability of general acceptance and success of the program.

The second point made by the Council was that the use of GAFs was supported throughout the stakeholder process as a means to redistribute halibut after initial allocation. The Advisory Panel also voiced strong support for leasing. However, several charter operators weakly supported the leasing provision and some opposed it at, and since, the October 2008 meeting.

The Council noted that leasing provisions were universally supported by those community representatives, tribal representatives, representatives of CQEs, and conservation advocates that testified before the Council in October 2008. The commercial sector also voiced strong support for the leasing provision at that meeting. The Council felt that the limited support for leasing by some charter operators could be attributed to the lack of clarity at the time, of whether a one-fish bag limit would be implemented in Area 2C in the foreseeable future as a result of this action and the tense relationship between the sectors in some Area 2C communities. Council members felt that if charter operators knew that the Council would select the present components of this preferred alternative, they may have been more supportive of the GAF program. Council members also felt that the leasing provisions provide increased fishing opportunities for charter anglers. While the use of leased fish (GAF) would likely increase the cost of a trip, anglers who want the opportunity to harvest two fish per day in Area 2C would have that opportunity using GAF.

Leasing IFQ would provide commercial QS holders greater flexibility when developing their annual harvest strategy. Currently many QS holders are prohibited from leasing their IFQs. This program would allow them to lease 10 percent of their IFQ allocation or 1,500 lb (whichever is greater). For persons that are issued 1,500 lb or less of IFQ, they could lease their entire allocation. This new opportunity to lease their IFQs could provide greater economic benefits to them.

This analysis indicates that the cost recovery fee paid by the commercial sector would be used to cover the cost of the GAF program. Charter LEP holders that lease the GAF would not be responsible for paying the cost recovery fee, since they do not generate exvessel revenue from the sale of halibut. Representatives of the commercial fleet have indicated that the fleet is willing to pay the cost of the GAF program through cost recovery. Members of the commercial fleet testified to the Council that they are willing to pay a larger percent of their exvessel revenue (it is limited to a maximum of 3 percent), if it is needed to fund the GAF program.

Arm's length contractual arrangements to lease IFQs would facilitate co-operative working relationships between sectors and may reduce current tensions. If both parties to the contract benefit from the arrangement, it could be expected to foster good working relationships. Over time, this cooperation could ease some of the tensions that developed in communities while this issue was debated.

Leasing insures better and timelier accounting. Tracking the use of GAF requires that individuals report GAF harvest to NMFS using the reporting system developed for that fishery (this would be addressed in

the proposed rule and has been addressed in a preliminary NMFS implementation plan<sup>102</sup>). Close to real time reporting is required to add and subtract fish from a charter LEP holder's GAF account so that NMFS management and enforcement staff know how many GAF are available to harvest with a specific LEP. The current charter catch accounting system used by ADF&G does not need to track charter harvests in real time. ADF&G's goal is to determine total charter halibut harvest after the fishing season. The need to manage numbers of fish at an individual LEP level would require additional oversight and enforcement of the charter fleet relative to the current system.

## 2.7 Net Benefit to the Nation

Based on the costs and benefits discussed in the RIR, the proposed action appears likely to result in a modest net benefit to the Nation. Resolution of the struggle over apportionment of the available Pacific halibut CEY, between the commercial fixed-gear and charter fishing sectors, will enhance stability in both sectors over the long-run and facilitate attainment of optimum yield for this high valued resource. Provision in this action of a "market-based" mechanism (albeit, not unconstrained), wherein willing buyers and willing sellers may negotiate mutually agreeable terms-of-trade, will facilitate the compensated redistribution of the resource to its highest and best short-term use, *ceteris paribus*. Changes in the total allocation and demand for "products" supplied by the respective sectors could impact income and employment, but redistribution of income and employment as a result of inter-sector competition for harvest-share should be reduced.

## 3 INITIAL REGULATORY FLEXIBILITY ANALYSIS

The Regulatory Flexibility Act (RFA), first enacted in 1980, and codified at 5 U.S.C. 600-611, 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 will 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.

This IRFA has been prepared instead of seeking certification. Analytical requirements for the IRFA are described below in more detail. The IRFA must contain:

1. A description of the reasons why action by the agency is being considered;
2. A succinct statement of the objectives of, and the legal basis for, the proposed rule;
3. 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);

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<sup>102</sup> [http://www.alaskafisheries.noaa.gov/npfmc/current\\_issues/halibut\\_issues/CHIPFinal\\_supp1008.pdf](http://www.alaskafisheries.noaa.gov/npfmc/current_issues/halibut_issues/CHIPFinal_supp1008.pdf)

4. 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;
5. An identification, to the extent practicable, of all relevant federal rules that may duplicate, overlap, or conflict with the proposed rule;
6. 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 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.

The RFA emphasizes predicting significant adverse economic impacts on small entities (e.g., businesses) as a group, distinct from other entities, which may result from regulations being proposed. Since the RFA is applicable to businesses, non-profit organizations, and governments, charter anglers fall outside of the scope of the RFA. Therefore, they will not be discussed in the RFA context. The focus of the RFA section is the charter halibut businesses and the commercial QS holders in Areas 2C and 3A.

The Pacific halibut resource is fully utilized by subsistence, personal-use, and unguided recreational users, as well as commercial and charter fishing operations in Areas 2C and 3A (see section 1.3 for a more complete discussion of the reasons this action is being considered). The Council has adopted a GHL for the halibut charter sector, and a charter LEP on new entry into the halibut charter fishery. Those actions, however, have not resolved allocation issues between the charter sector and other users of the halibut resource. Concerns of reallocation between the commercial and charter halibut sectors still exist, and members of the commercial halibut sector are concerned about the stability of their access to the halibut resource. This action is expected to provide the basis for determining the initial commercial and charter allocations from a combined catch limit that would be determined by the IPHC, upon request of the Council.

A major motive in developing this program was to stabilize commercial and charter halibut harvests. Commercial halibut fishermen remain concerned that the charter fleet would erode their percentage of the harvest in the future. These concerns have created tension within communities that are dependent on both sectors exploiting the halibut resource. The Council believes that stabilizing the relative harvests of the two sectors would ease those tensions.

The allocation alternatives, based on historical charter harvests, would define the amount of halibut allocated to a charter sector common pool that would be accessible to all charter LEP holders. All licensed halibut businesses would be allowed to provide their clients the opportunity to harvest from that allocation. In the event the charter regulations in their area are more restrictive than the unguided angler regulations, charter LEP holders could lease GAF for their clients to use to harvest halibut under the same rules that govern the unguided halibut angler, exempting them from the more restrictive charter regulations.

### **3.1 Objective Statement of Proposed Action and its Legal Basis**

The objective of the proposed action is to ensure equitable allocation of the halibut resource, while also promoting conservation of the resource by resolving harvest-share conflicts between the commercial and charter sectors of the halibut fishery in Area 2C and Area 3A (see section 1.3 for a list of the management objectives for this action). During the early 1990s, the charter fleet experienced substantial growth. Projections made in the mid-1990s, indicated that the charter fleet's harvest of Pacific halibut could grow to a level equal to or greater than the commercial fleet's catch in Areas 2C and 3A, by year 2008, if left unchecked. Those growth rates have not been realized, but charter harvests have increased over the past 12 years.

The Council stated its objective is to establish a catch sharing plan for the commercial and charter sectors. The charter sector's allocation would be managed to ensure that charter halibut harvests stay within the charter sector's allocated range. When establishing that allocation, the Council also considered the charter sector's need to have a stable in-season regulatory environment. Management of the charter sector is intended to ensure that it is given advance notice and predictability with respect to application of management tools (e.g., bag limits, size restrictions) and season length. For example, this program will implement annual management measures for the charter sector that are specified prior to the beginning of the fishing season. This annual implementation of the CSP likely would be timely and responsive to changes in halibut abundance while providing the charter sector with advance notice of the effective charter fishery management measures. The Council also stated its intent to review whether the charter sector is staying within its allocation and, if necessary, to err on the side of more restrictive management measures to assure attainment of their objectives for this action. The commercial IFQ program would be modified to allow the charter sector to lease commercial halibut IFQ. Leasing IFQ would allow the charter sector to grow, over the long term, but only when they compensate the commercial sector for the additional halibut taken.

The Halibut Act grants the Council authority to develop regulations that are in addition to, and not in conflict with, regulations adopted by the International Pacific Halibut Commission and to oversee allocations of the halibut fishery in Alaskan and federal waters. Setting overall removals of halibut is under the authority of the International Pacific Halibut Commission.

### **3.2 A description of small entities and an estimate of the number of small entities to which the proposed action will apply**

The RFA recognizes and defines three kinds of small entities: (1) small businesses, (2) small non-profit organizations, and (3) small government jurisdictions.

Section 601(3) of the RFA defines a "small business" as having the same meaning as "small business concern" which is defined under section 3 of the Small Business Act. "Small business" or "small business concern" includes any firm that is independently owned and operated and not dominate in its field of operation. The Small Business Act has further defined a "small business concern" as one "organized for profit, with a place of business located in the United States, and which operates primarily within the United States or which makes a significant contribution to the U.S. economy through payment of taxes or use of American products, materials, or labor... A small business concern may be in the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust, or cooperative, except that where the form is a joint venture there can be no more than 49 percent participation by foreign business entities in the joint venture."

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 \$7.0 million. 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 million for all its affiliated operations worldwide. A business involved in both the commercial harvesting and processing of seafood products is a small business if it meets the \$4 million criterion for fish harvesting operations.

The SBA has established “principles of affiliation” to determine whether a business concern is “independently owned and operated.” In general, business concerns are affiliates of each other when one concern controls or has the power to control the other, or a third party controls or has the power to control both. The SBA considers factors such as ownership, management, previous relationships with or ties to another concern, and contractual relationships, in determining whether affiliation exists. Individuals or firms that have identical or substantially identical business or economic interests, such as family members, persons with common investments, or firms that are economically dependent through contractual or other relationships, are treated as one party with such interests aggregated when measuring the size of the concern in question. The SBA counts the receipts or employees of the concern whose size is at issue and those of all its domestic and foreign affiliates, regardless of whether the affiliates are organized for profit, in determining the concern’s size. However, business concerns owned and controlled by Indian Tribes, Alaska Regional or Village Corporations organized pursuant to the Alaska Native Claims Settlement Act (43 U.S.C. 1601), Native Hawaiian Organizations, or Community Development Corporations authorized by 42 U.S.C. 9805, are not considered affiliates of such entities, or with other concerns owned by these entities solely because of their common ownership.

Affiliation may be based on stock ownership when (1) A person is an affiliate of a concern if the person owns or controls, or has the power to control 50 percent or more of its voting stock, or a block of stock which affords control because it is large compared to other outstanding blocks of stock, or (2) If two or more persons each owns, controls or has the power to control less than 50 percent of the voting stock of a concern, with minority holdings that are equal or approximately equal in size, but the aggregate of these minority holdings is large as compared with any other stock holding, each such person is presumed to be an affiliate of the concern.

Affiliation may be based on common management or joint venture arrangements. Affiliation arises where one or more officers, directors, or general partners control the board of directors and/or the management of another concern. Parties to a joint venture also may be affiliates. A contractor and subcontractor are treated as joint venturers if the ostensible subcontractor would perform primary and vital requirements of a contract or if the prime contractor is unusually reliant upon the ostensible subcontractor. All requirements of the contract are considered in reviewing such relationship, including contract management, technical responsibilities, and the percentage of subcontracted work.

### **Charter Fishery**

Halibut charter businesses regulated under this action are all or are almost all expected to be small entities, based upon SBA criteria that their annual gross revenue, from all sources, does not exceed \$7.0 million. Because revenue data are not collected from these businesses, it is not possible to provide average business revenues. Instead general data are used to discuss why they are thought to meet the small entity classification.

In Area 2C, ADF&G data indicate that an average of 665 vessels operated as charters during the LEP qualifying years of 2004, 2005 and 2008. Those vessels were operated by 231 entities that are projected to earn at least one LEP. Because 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 \$350 per day, depending on the length of the trip and other amenities. Hence, a single vessel with a maximum capacity of six anglers could generate \$180,000 in a single season, if it operated one trip per day at full 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 33 trips in 2010, with an average client load of 3.9 passengers. Thus, the average vessel likely generated approximately \$33,000 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 all operators are likely to be small businesses, based upon the \$7.0 million SBA threshold for RFA. The largest companies involved in the fishery are fishing 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 previous charter issues indicated that the absolute largest of these companies may gross more than \$7.0 million per year, but it is also possible that all of the entities involved in the charter halibut industry grossed less than that amount. This analysis is unable to verify these estimates.

### LEP qualifying entities and vessels

Area	LEP Qualifying Entities	Average Number of Vessels Operated in Qualifying Years
2C	231	665
3A	296	567

Source: Alaska Department of Fish and Game, 2008.

In Area 3A, ADF&G data show that an average of 567 vessels recorded charter trips for halibut in the LEP qualifying period. Those vessels were operated by 296 different entities that may receive an LEP. As in Area 2C, 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 approximately 120 days, between early May and mid-September, and vessels generally carry up to six paying passengers per trip. Key informant interviews indicate single trip prices average between \$150 and \$350 per day. Hence, a single vessel operator with a maximum capacity of six anglers could generate \$180,000 in a single season, if he/she 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 every day of the season would generate \$360,000 in revenue. ADF&G data indicate that the average vessel took 37 trips in 2010, with an average client load of 6.1 passengers. Thus, the average vessel likely generated approximately \$56,500 in revenue. At \$56,500 per vessel, it would require more than 120 vessels operating at maximum capacity to generate more than \$7.0 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 largest charter businesses, which are lodges, as stated earlier, may not be considered a small entity under SBA standards, but that cannot be confirmed with available data. All of the other 500-plus charter operations would likely be considered small entities, based upon SBA criteria, since they would be expected to have gross revenues of less than \$7.0 million on an annual basis.

### Commercial fishery

Businesses operating in the commercial halibut sector would be directly regulated by this action. Halibut IFQ holders are directly regulated by the Council requesting the IPhC to implement a combined catch limit. This action creates a single pool of fish from which the two commercial (i.e., setline and charter) sectors would harvest halibut in Area 2C and Area 3A. Halibut QS holders would also be directly regulated by allowing Area 2C and Area 3A commercial QS holders to lease IFQ to the charter sector as GAF. Finally, **all halibut and sablefish QS holders in Alaska would be directly regulated**, because they would be required to pay the cost recovery fee to help cover the costs of the management of the IFQ/GAF programs.

The preferred alternative could directly regulate as many as 2,759 halibut QS holders and 843 sablefish QS holders (RAM data accessed on May 18, 2011 at <http://alaskafisheries.noaa.gov/ram/ifqreports.htm>);



however, the actual number of such entities that may be directly regulated is expected to be smaller, because some individuals hold both types of QS.

The 2010 Economic SAFE Report contains data on estimated gross revenues from all fishery related activity, for operations harvesting groundfish in 2009. Table 36 of the SAFE Report indicates that no hook-and-line catcher vessels had more than \$4 million in gross revenues from all fishing sources in and off Alaska. That was also the case in the years 2005 through 2008. The average gross revenue for the small hook-and-line catcher vessels in 2009 was about \$390,000. Thus, all of the entities that harvest both groundfish and halibut are under the \$4 million threshold that would qualify an entity involved in fish harvesting as a small business. This includes all of the entities that harvest any sablefish. Because of regulatory limits on the size of halibut QS and sablefish QS, and the amounts that may be used, NMFS believes that few vessels that harvest halibut, but no groundfish, would exceed the \$4 million threshold, either. The IFQ program limits the amount of annual IFQ that any single vessel may be used to harvest and the maximum number of QS units an entity may use. NMFS annually publishes the number of QS units that an entity may use. A vessel may be used to land up to 1 percent of all IFQ issued for halibut in Area 2C (50,200 net lb in 2009); the same percentage cap is set for sablefish in Southeast (60,538 round lb in 2009). The vessel cap is 0.5 percent of the IFQ issued for halibut in Area 3A (217,744 net lb in 2009); the same percentage cap is set for sablefish in Southcentral (264,883 round lb in 2009).

NMFS annually publishes “standard prices” for halibut that are estimates of the exvessel prices received by fishermen for their harvests. NMFS uses these prices for calculating the permit holder’s cost recovery fee. In 2009, the standard exvessel price per pound for halibut in Area 2C and in Area 3A was \$3.33 and \$3.20, respectively (74 FR 65741, December 11, 2009).

The harvest limits and prices, identified above, reflect the maximum exvessel gross revenues in 2009 accruing to a vessel operator who owned the maximum permissible amount of QS units for halibut (\$167,000 in Area 2C and \$697,000 in Area 3A). The average vessel’s gross revenue would have been approximately \$28,000 in Area 2C and \$119,000 in Area 3A if all of the harvested halibut had been sold at the 2009 standard price.

While some operations considered here participate in other revenue generating activities (e.g., other fisheries), the halibut fishery likely represents the largest single source of annual gross receipts for many of these operations. Based upon available data, and more general information concerning the probable economic activity of vessels in this IFQ fishery, no entity (or at most a *de minimus* number) directly regulated by these restrictions could have been used to land more than \$4.0 million in combined gross receipts in 2009. Therefore, all halibut vessels have been assumed to be “small entities,” for purposes of the IRFA. This simplifying assumption may overestimate the 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.

Based on the “relatively” low gross revenues for the average groundfish vessel, and the low cap on maximum halibut revenues, additional revenues from herring, salmon, crab, or shrimp likely would be relatively small for most of this class of vessels. Therefore, the available data and analysis suggest that there are few, if any, large entities among the directly regulated entities subject to the proposed action.

#### Small Organizations

The RFA defines “small organizations” as any not-for-profit enterprise that is independently owned and operated and is not dominant in its field. Community Quota Entities (CQE) fall into this category. CQEs were created to administer IFQ for the rural Alaska communities defined under 50 CFR 300.65(g)(1). Not all of the communities eligible to create a CQE have taken advantage of that option. A list of the communities that have formed a CQE, as of May 2011, are listed in Table 77. That table indicates that twelve CQEs have been formed in Area 2C and nine in Area 3A. These 21 communities could benefit from the more liberal GAF and IFQ transfer provisions afforded CQEs as part of this amendment.

Additional rural Alaska communities defined at 50 CFR 300.65(g)(1) could also take advantage of these provisions, if they determine it is beneficial and form a CQE.

**Table 77 Area 2C and Area 3A communities that have formed CQEs.**

Area 2C	Area 3A
Craig	Larsen Bay
Hydaburg	Ouzinkie
Pelican	Old Harbor
Hoonah	Chenega Bay
Angoon	Port Graham
Kasaan	Yakutat
Thorne Bay	Akhiok
Klawock	Nanwalek
Coffman Cove	Seldovia
Elfin Cove	
Point Baker	
Port Protection	

### 3.3 Recordkeeping requirements

Common pool allocations would continue to be managed using the Saltwater Logbook reporting system developed by ADF&G. Data to estimate annual removals from the common pool do not need to be collected and entered in the management database daily to ensure regulations are followed. The Saltwater Logbook does require that the information for each trip or day of fishing be completed before the halibut are offloaded. Therefore, the logbook system that requires weekly reports on the number of paying clients, “comp’ed” clients, and their harvest has been determined to be sufficient to track and enforce the common pool allocation. Real time completion of the logbook would allow enforcement and sampling officials to verify catch by angler on a specific trip.

The GAF allocation would need to be managed in real time, using an IFQ style electronic reporting system. The Council intends that NMFS would implement a reporting system to collect data from all persons that obtain or use GAF (see RIR Enforcement section). As close to real time data as possible are needed to allow fishery managers and enforcement officers to know, at a given time, how many GAF a person holds and how many they have used. The costs to the charter LEP holders are not expected to increase dramatically under the common pool structure. The GAF may increase costs, but the program is voluntary and charter LEP holders can weigh their own costs and benefits of participating in the program. NMFS would implement a GAF electronic reporting system for charter operators to complete a landing report for the number of GAF retained each calendar day. This daily reporting requirement would enable immediate confirmation that adequate GAF exist in the account to cover the landing and afford the charter operator instant access to updated account information. Charter operators reporting retained GAF would incur hardware, software, and Internet access costs to log on to the reporting system via the NMFS Alaska Region web site. NMFS estimates that it would take 18 minutes to submit a GAF landing report. Assuming a personnel cost of \$25 per hour, the cost burden for the industry to complete a GAF landing

report is estimated to be \$7.50 per trip. The professional skills that would be necessary for a charter operator reporting GAF include basic computer and data entry skills.

There are unique monitoring and enforcement implications for each of the two types of “charter halibut” under the proposed alternative: common pool and GAFs. The Council has stated its intent that the common pool be monitored using ADF&G data (either SWHS or logbook data, whichever is determined to be the best scientific information available). Port samplers would be allowed on private property to inspect GAF landings. This alters the current regulations that limit port samplers access to charter landings that occur on private property. The Council also intends that length measurements of GAFs be collected by port samplers for accurate accounting.

### **3.4 Identification of Relevant Federal Rules that May Duplicate, Overlap or Conflict with the Proposed Actions**

The GHF is currently used to define a target charter harvest level in Areas 2C and 3A. Implementation of the trigger system, proposed by the Council, would supersede the GHF by setting a target harvest amount for the charter sector common pool based on a percentage of the combined charter and setline catch limit. That target harvest amount would replace the GHF. The NMFS would remove the GHF program from regulation if the common pool allocation is implemented.

The proposed GAF program would require NMFS to amend the commercial IFQ regulations to allow commercial IFQ holders in Areas 2C and 3A to lease commercial halibut IFQ to charter LEP holders. Leasing of commercial IFQ is currently limited to specific cases that are not covered under the preferred alternative. Expansion of the leasing provisions would be strictly limited to transfers between IFQ permit holders and LEP holders. Current leasing restrictions would need to be modified to allow limited transfers to charter LEP holders.

This analysis did not identify any additional measures that may duplicate, overlap or conflict with the proposed actions.

### **3.5 Description of Alternatives to the Proposed Action that Would Accomplish the Stated Objectives of the MFCMA and Would Minimize any Negative Economic Impacts on Small Entities**

The objective of this action, as discussed in section 1.3, is to develop a catch sharing plan that limits both the commercial setline fishery and the charter anglers to a predetermined amount of a combined catch limit that is set annually by the IPHC. This analysis examined multiple alternatives, including (1) the status quo, (2) Alternative 2, which contains multiple options under six primary decision elements to allocate a combined catch limit between the commercial setline fishery and charter fishery in Areas 2C and 3A and allow the leasing of commercial IFQs by charter LEP holders, so that their clients could fish under regulations for unguided anglers, and (3) the Preferred Alternative to set (i) an initial allocation between the sectors in each area, (ii) specific management measures that would be triggered at different combined charter and commercial catch limits to be set by the IPHC each year, and (iii) a Guided Angler Fish program to allow leased commercial IFQs to expand charter angler fishing opportunities.

The Council and NMFS have considered and rejected numerous alternatives to achieve the objectives of this action (to allocate halibut catch between the charter and commercial setline fisheries). The history of the GHF program and its ineffectiveness (until 2009) at limiting halibut harvest to the GHF in Area 2C are described briefly in section 1.2. The Council approved a charter IFQ program in April 2001, but rescinded the program in 2005, before it was implemented. Since that time the Council has implemented the GHF program and numerous amendments to limit growth in the charter sector. Management options previously considered but included seasonal closures, size limits, daily bag limits, annual bag limits,

restrictions on the number of trips that a firm could take in a year, and limits on the number clients a firm could allow to harvest halibut from each vessel. Each of these alternatives has been rejected, because they were deemed to be ineffective or imposed unnecessary negative economic impacts (primarily on small entities). For example, some measures considered would allow inseason management changes in the charter sector that could create logistical problems when booking clients or economic burdens associated with refunding deposits, if the bag limits or size limits change inseason. The preferred alternative eliminates inseason management changes and the need for additional regulatory amendments, while achieving the objectives identified for the action. Indeed, no other alternative identified by the Council appeared to have the potential to accomplish the goals set out for this action, while minimizing the adverse economic impacts on directly regulated small entities, when compared to the proposed action.

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## 5 LIST OF CONTRIBUTORS

Jane DiCosimo  
North Pacific Fishery Management Council  
605 West 4<sup>th</sup> Avenue, Suite 306  
Anchorage, AK 99501

Rachel Baker, Dr. Ben Muse, and Jason Gasper  
NMFS Alaska Region  
709 W. 9<sup>th</sup> St.  
Juneau, AK 99802-1668

Darrell Brannan  
17307 SE CR 234  
Micanopy, FL 32667

Dr. Lewis Queirolo  
NMFS Alaska Region  
440 Eagle Crest Rd.  
Camano Island, WA 98282

Jonathan King  
Northern Economics  
880 H. Street, Suite 210  
Anchorage, AK 99501

Gregg Williams, Dr. Bruce Leaman, Dr. Steven Hare  
International Pacific Halibut Commission  
2320 W. Commodore Way Suite 300  
Seattle, WA 98199-1287

Scott Meyer  
Alaska Department of Fish and Game  
333 Raspberry Road  
Anchorage, AK 99802

Sarah Gaichas, Ph.D.  
NMFS Alaska Fisheries Science Center  
7600 Sand Point Way, Bldg. 4  
Seattle, WA 98115

## 6 INDIVIDUALS CONSULTED

Sue Salvesson, Jay Ginter, Jessica Gharrett,  
Tracy Buck, and Peggy Murphy  
National Marine Fisheries Service  
Juneau, Alaska

Tom Pearson  
NMFS SF  
Kodiak, Alaska

Jeff Passer, Ron Antaya, and Kevin Heck  
NOAA Office of Law Enforcement  
Juneau, Alaska

John Lepore, Susan Auer, Maura Sullivan, Jonathan  
Pollard  
NOAA Office of General Counsel  
Juneau, Alaska

Cleo Brylinksy  
ADF&G Commercial Fisheries  
Sitka, Alaska  
Ken Goldman, Charlie Trowbridge, Willy  
Dunne

ADF&G Commercial Fisheries  
Homer, Alaska

Nick Sagalkin  
ADF&G Commercial Fisheries  
Kodiak, Alaska

Sue Aspelund, Stefanie Moreland  
ADF&G Commercial Fisheries  
Juneau, Alaska

## 7 Appendix A: ARIMA Estimates of Future Charter Harvest

### Projections of Future Charter Harvest

This analysis includes projections of charter harvest from 2007 through 2011 through the use of an autoregressive integrated moving average (ARIMA) model. As noted in the SSC's minutes from April 3, 2008 "past catches do not determine future catches, but past catches are a reasonable process for projecting future catches, so long as the latent processes [e.g., angler preferences, catch rates, etc.] are unchanged."

#### Data

The Alaska Department of Fish and Game (ADF&G) provided mean estimates of charter halibut harvest and associated standard errors by year for each IPHC area between 1996 and 2006 (see Table A1 and A2).

**Table A1 Area 2C harvest data**

Year	Mean Harvest Estimate	Standard Error	L95%CI	U95%CI
1996	1.187	0.069	1.051	1.322
1997	1.034	0.061	0.914	1.153
1998	1.584	0.220	1.153	2.015
1999	0.939	0.053	0.835	1.043
2000	1.130	0.065	1.001	1.258
2001	1.202	0.063	1.079	1.326
2002	1.275	0.068	1.143	1.408
2003	1.412	0.067	1.281	1.543
2004	1.750	0.086	1.582	1.918
2005	1.952	0.095	1.767	2.138
2006	1.804	0.089	1.628	1.979

Source: Alaska Department of Fish and Game, 2007.

**Table A2 Area 3A harvest data**

Year	Mean Harvest Estimate	Standard Error	L95%CI	U95%CI
1996	2.822	0.089	2.648	2.995
1997	3.413	0.108	3.201	3.625
1998	2.985	0.109	2.771	3.199
1999	2.533	0.082	2.373	2.693
2000	3.140	0.099	2.945	3.335
2001	3.132	0.098	2.940	3.325
2002	2.724	0.110	2.509	2.938
2003	3.382	0.103	3.180	3.584
2004	3.668	0.099	3.474	3.863
2005	3.689	0.111	3.471	3.906
2006	3.664	0.108	3.451	3.876

Source: Alaska Department of Fish and Game, 2007.

ADF&G generates these estimates on an annual basis from the Statewide Harvest Survey (SWHS). The SWHS data is the only stable and continuous time series available for projecting charter halibut harvest. The other primary source of data on charter halibut harvest and effort, ADF&G's logbook program, is a discontinuous time series. This program collected data on halibut harvest and effort from 1998 to 2001 and in 2006. Additionally, ADF&G staff testified before the SSC at the April 2008 meeting that the 2006

logbook program is substantively different from the program the Department administered between 1998 and 2001. The lack of consistent time series from the logbooks means that the ARIMA model cannot be applied to the logbook data at this time. Additionally, as the logbook is the primary source of data on effort (e.g., client days, number of active vessels, trips by active vessels, rods fished, client hours fished), it is impossible to build a deterministic model with explanatory variables rather than the model which projects harvest based on the momentum and pattern of underlying latent processes.

### **Analytical Methods-ARIMA Models**

The ARIMA ( $p,d,q$ ) models allow the analysis to account for autocorrelated ( $p$ ), stationarity ( $d$ ), and moving average ( $q$ ) processes in the data. In layman's terms:

- The autocorrelated process is the effect that an angler's decision to go charter fishing may have on another angler's decision to go charter fishing in subsequent years. For example, an angler has a good charter experience and influences family, friends, or neighbors to go charter fishing in subsequent years.
- Stationarity is whether there is some underlying process driving changes in charter harvest from year to year. For example, many have argued that the low cost of entry into the charter fleet has, over time, resulted in more vessels entering the fleet, lower prices, and greater availability of seats on charter vessels. This trend has been particularly evident in Area 2C as the number of vessels and seats available has grown in recent years (see NPFMC 2007b). The analysis conducted a series of tests for the presence of a unit root process including the Phillips-Perron, Dickey-Fuller, and the KPSS tests and uses differencing to account for non-stationary nature of the data.<sup>103</sup>
- The moving average process may be described as the momentum built up in the system where an action in one year affects the next year. For example, an angler has a good charter experience and makes that charter experience an annual event. These events lead to a virtuous cycle of underlying support for the charter experience.

Both the ARIMA model for Area 2C and 3A take the functional form of (2,1,1). The models have two lags of autocorrelations, are differenced 1 time, and have 1 lag associated with the moving average term. The analysis selected this combination of lags and differencing by selecting the combination that provided the best log likelihood score. In addition to accounting for the items discussed above, the ARIMA model also includes a weighting system based on the standard error and coefficient of variation for individual observations. The weights result in the model placing greater emphasis on observations where the coefficient of variation is smaller (i.e., where ADF&G's estimate of harvest falls into a range with less difference between the mean estimate of harvest and the 95 percent confidence intervals).

Figures A1 and A2 show the ARIMA model results for the Area 2C and Area 3A models. In both models the constant and the variable for "year" are statistically significant at the 1 percent level. The variables for the autoregressive lags and the moving average lags are statistically insignificant in the Area 2C model. In the Area 3A model the autoregressive lags are statistically significant at the 5 percent (lag 1) and 1 percent level (lag 2) while the moving average lag is statistically insignificant.

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<sup>103</sup> For Area 2C, each test either rejected the hypothesis of stationary process or accepted the null hypothesis of a non-stationary process at the 5 percent critical value. For Area 3A, the KPSS failed to reject the null hypothesis of a stationary process at 5 percent critical value, but rejected the null hypothesis at the 10 percent critical value. The Phillips-Perron and Dickey-Fuller tests failed to reject the null hypothesis of a non-stationary process at the 5 percent critical value. Consequently, the analysis uses a differencing component to account for the non-stationary process.

```

. /*2C ARIMA Differenced Model*/
> arima harvest year [iweight=seweight], ar(1/2) ma(1/1) nolog;

```

ARIMA regression

Sample: 1996 - 2006                      Number of obs        =        11  
Wald chi2(4)                              =        219.40  
Log likelihood = 9.049072                Prob > chi2           =        0.0000

harvest	Coef.	OPG Std. Err.	z	P> z	[95% Conf. Interval]	
-----						
harvest						
year	.0816413	.0059289	13.77	0.000	.0700209	.0932616
_cons	-161.988	11.86422	-13.65	0.000	-185.2414	-138.7345
-----						
ARMA						
ar						
L1.	-.4926107	.3392235	-1.45	0.146	-1.157477	.1722552
L2.	.164679	.1205817	1.37	0.172	-.0716569	.4010149
ma						
L1.	.537423	.3808153	1.41	0.158	-.2089613	1.283807
-----						
/sigma	.1982546	.0175102	11.32	0.000	.1639352	.232574
-----						

Figure A1 ARIMA Model for Area 2C

```

. /*3A ARIMA Differenced Model */
> arima harvest year [iweight=seweight], ar(1/2) ma(1/1) nolog;

```

ARIMA regression

Sample: 1996 - 2006                      Number of obs        =        11  
Wald chi2(4)                              =        143.86  
Log likelihood = 3.149618                Prob > chi2           =        0.0000

harvest	Coef.	OPG Std. Err.	z	P> z	[95% Conf. Interval]	
-----						
harvest						
year	.0812177	.0097145	8.36	0.000	.0621775	.1002578
_cons	-159.3399	19.4251	-8.20	0.000	-197.4124	-121.2674
-----						
ARMA						
ar						
L1.	-.3792537	.1607315	-2.36	0.018	-.6942816	-.0642258
L2.	-.4556007	.1701645	-2.68	0.007	-.789117	-.1220843
ma						
L1.	.9292478	1.078366	0.86	0.389	-1.184311	3.042807
-----						
/sigma	.2064763	.0930091	2.22	0.026	.0241817	.3887708
-----						

Figure A2 ARIMA Model for Area 3A

## ***Harvest Estimates***

The analysis uses the model generated by the ARIMA analysis to project charter harvest forward in time. As previously noted, past catches do not determine future catches, but past catches are a reasonable process for projecting future catches, so long as the latent processes [e.g., angler preferences, catch rates, etc.] are unchanged. These initial projections do not account for management measures that took effect in 2007 and those that may take effect in 2008.

There are important differences between the data provided by ADF&G and the estimates derived from these models. Specifically:

- ADF&G estimates sector harvest and their confidence intervals represent a range where ADF&G is 95 percent confident that actual or “true” harvest as measured by the SWHS lies within the confidence interval. Each year ADF&G publishes a mean estimate of harvest which becomes the official harvest estimate for Council purposes.
- This analysis estimates mean harvest and the confidence intervals represent a range where the model is 95 percent confident that ADF&G’s estimate of the mean of the harvest will lie within the confidence interval.

Consequently, in this analysis the boundary of the upper 95 percent confidence interval is not an estimate of the upper limit of harvest; it is an estimate of the upper limit of ADF&G’s mean estimate of harvest. This point is subtle, but very important when interpreting the results of the analysis. The difference between the two estimation procedures can best be seen in the figures at the end of this appendix.

### Harvest Estimates for Area 2C

For Area 2C, the analysis projects unadjusted harvest and associated 95 percent confidence intervals between 2007 and 2011.<sup>104</sup> The unadjusted harvest total would be expected to increase from 1.888 Mlb to 2.196 Mlb, or 16.3 percent, between 2007 and 2011 without any management changes (see Table A3). The 95 percent confidence interval for harvest mean in 2007 is 1.808 to 1.968 Mlb while the 95 percent confidence interval for 2011 is 2.074 and 2.318.

For Area 2C, the analysis adjusts the estimates of future harvest by the estimated effect of the management measures NMFS enacted in 2007 (i.e., the 32” maximum length on the second fish) and continues this management measure through 2011.<sup>105</sup> NPFMC (2007) provides a range of estimates of the effectiveness of each management measure in reducing harvest (see Table A4). For example, the 32” maximum length rule is estimated to reduce harvest to between 73.9 percent and 80.3 percent of the pre-management level depending on high-grading and other factors. It is not clear whether the actual effectiveness of each management measure will be closer to the “less effective” estimate or the “more effective” estimate. Consequently, the analysis also provides an average adjustment which reflects the fact that in all likelihood there will be some anglers who high-grade under the size limit or some level of demand reduction associated with the one-fish bag limit. It is the estimates which use “average effectiveness” which are passed through to the main analysis. The analysis does not make any adjustment in the efficacy of the measures over time. For example, it may take a portion of anglers a season to realize that they do not want to pay for charter trips under a one-fish bag limit or, vice-versa, several seasons to

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<sup>104</sup> In its October 2007 minutes the SSC requested the analysis project harvest no more than 5 years from the last observation available in the time series.

<sup>105</sup> NMFS may choose to develop a new final rule enacting a one-fish bag limit starting in 2009. This measure was supposed to be enacted in 2008, but was blocked through a temporary injunction issued by the Federal Courts. Both management measures include a ban on skipper and crew harvest.

realize that a one-fish bag limit doesn't necessarily limit their experience. The analysis does not have any data on the temporal nature of these reactions with which to adjust the analysis.<sup>106</sup>

**Table A3 Mean Area 2C harvest estimates unadjusted for 2007 or 2008 management measures**

Year	ADF&G's Mean Harvest Estimate	Model Estimate of Mean Harvest (Unadjusted for Management Measures)	Standard Error (Mlb)	Lower 95% Confidence Interval for the Harvest Mean (Mlb)	Upper 95% Confidence Interval for the Harvest Mean (Mlb)
1996	1.187	0.968	0.037	0.896	1.040
1997	1.034	1.057	0.032	0.994	1.120
1998	1.584	1.163	0.028	1.109	1.217
1999	0.939	1.212	0.024	1.164	1.259
2000	1.130	1.358	0.022	1.315	1.401
2001	1.202	1.290	0.021	1.249	1.331
2002	1.275	1.470	0.022	1.427	1.512
2003	1.412	1.496	0.024	1.450	1.543
2004	1.750	1.609	0.027	1.556	1.662
2005	1.952	1.694	0.031	1.633	1.755
2006	1.804	1.821	0.036	1.751	1.891
2007		1.888	0.041	1.808	1.968
2008		1.940	0.046	1.850	2.030
2009		2.037	0.051	1.936	2.137
2010		2.106	0.057	1.995	2.217
2011		2.196	0.062	2.074	2.318

Source: NEI Estimates, 2008.

**Table A4 Post-management action harvest as a percentage of pre-management action harvest by management measure**

Effectiveness	2007 Implementation of the 1 Fish under 32" Rule by NMFS <sup>107</sup>	2008 Implementation of a 1 Fish Bag Limit <sup>108</sup>
Less Effective	80.3%	60.3%
Most Effective	73.9%	42.2%
Average	77.1%	51.3%

Source: NPFMC, 2007.

Table A5 shows the ARIMA estimates of Area 2C harvest adjusted for the implementation of maximum size limit in 2007 and continuing through 2011. After these adjustments, the mean harvest estimate for 2007 is expected to be between 1.376 Mlb and 1.536 Mlb with an average estimate of 1.456 Mlb. The estimate of mean harvest for 2011 is for harvest to be between 1.623 and 1.763 Mlb with an average estimate of 1.693 Mlb.

<sup>106</sup> Anecdotal evidence collected during the April 2008 meeting indicated that some Area 2C lodge owners were experiencing a 10-20 percent decline in 2008 bookings in comparison to 2007 bookings at the same time. Owners reported that bookings for July 2008 were particularly affected because halibut is the primary species available at that time, which is between king salmon season and silver salmon season.

<sup>107</sup> "More effective" assumes that anglers do not high grade their harvest and catch the average fish under 32" at the same ratio as before the measure. "Less effective" assumes anglers are able to high-grade by one size class equal to two inches in length above the average size under 32".

<sup>108</sup> "More effective" includes a 30 percent reduction in demand by all anglers for trips. "Less effective" include no reduction in demand by anglers for trips.

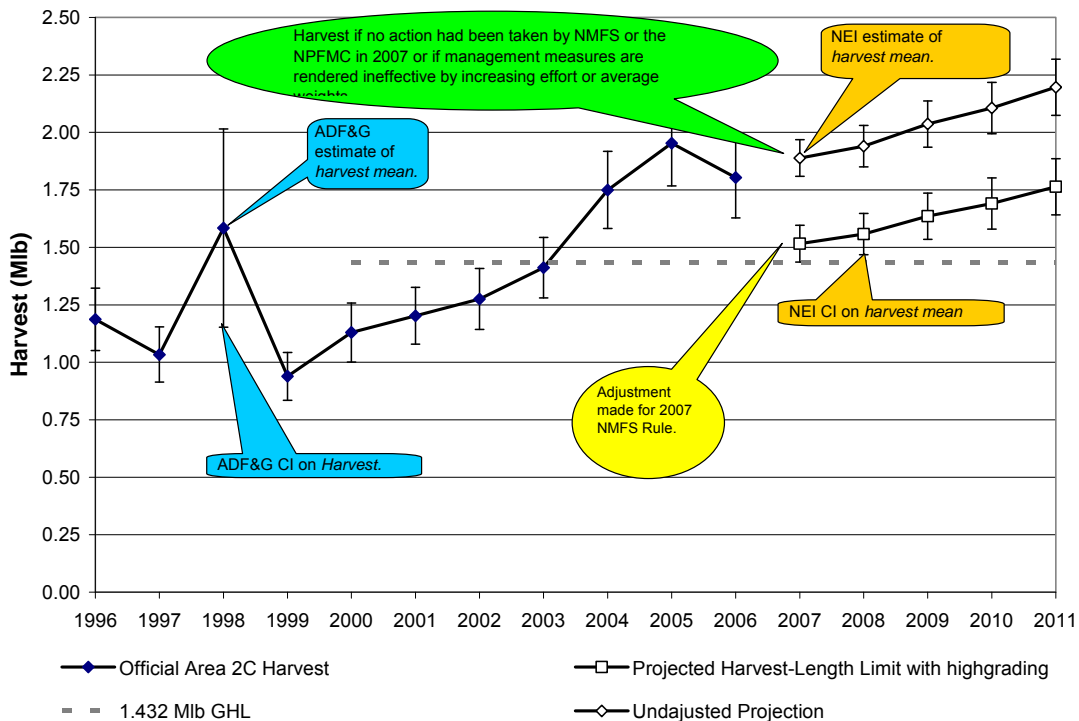
**Table A5 Unadjusted and adjusted estimates<sup>109</sup> of mean harvest in Area 2C with confidence intervals (Mlb)**

Year	Unadjusted Estimates			If 2007 and 2008 Regulations are Less Effective at Lowering Harvest			Average of Less and More Effective			If 2007 and 2008 Regulations are More Effective at Lowering Harvest		
	Est. Mean	L95% CI	U95% CI	Est. Mean	L95% CI	U95% CI	Est. Mean	L95% CI	U95% CI	Est. Mean	L95% CI	U95% CI
2007	1.888	1.808	1.968	1.516	1.436	1.596	1.456	1.376	1.536	1.396	1.316	1.476
2008	1.940	1.850	2.030	1.558	1.468	1.648	1.496	1.406	1.586	1.434	1.344	1.524
2009	2.037	1.936	2.137	1.635	1.535	1.736	1.570	1.470	1.671	1.505	1.405	1.606
2010	2.106	1.995	2.217	1.691	1.580	1.802	1.624	1.513	1.735	1.557	1.446	1.668
2011	2.196	2.074	2.318	1.763	1.641	1.885	1.693	1.571	1.815	1.623	1.501	1.746

Source: NEI Estimates, 2008

Figure A3 compares historic ADF&G data on Area 2C harvests with unadjusted and adjusted estimates of future harvest based on the status quo. The figure uses the “average effectiveness” data highlighted in Table A5.

*CAVEATS: The accuracy of the adjusted harvest projections in both Areas are subject to certain caveats. In Area 2C if the estimated effect of length restrictions instituted in 2007 by NMFS if eroded by increasing harvest effort or increasing average weights then overall actual harvest will more closely match the unadjusted harvest projection, which will exceed the GHL in Area 2C.*



**Figure A3 Historic Area 2C harvests compared with model estimates of the mean of future harvests adjusted for status quo management measures**

Source: NEI Estimates, 2008.

<sup>109</sup> Includes the 32” maximum length limit on the second fish in an angler’s daily bag limit in 2007 and assumes the institution of a one fish bag limit in 2008 through 2011.



This analysis recognizes that the assumed status quo of a length limit on the second fish extending through 2011 may change if NMFS publishes a final rule establishing a one fish bag limit in 2009. Figure A4 compares historic ADF&G data on Area 2C harvests with unadjusted and adjusted estimates of future harvest adjusted for the institution of a one fish bag limit in 2009. The figure assumes the “average efficacy” which is the mid-point between the no-demand reduction and 30 percent reduction in demand for trips.

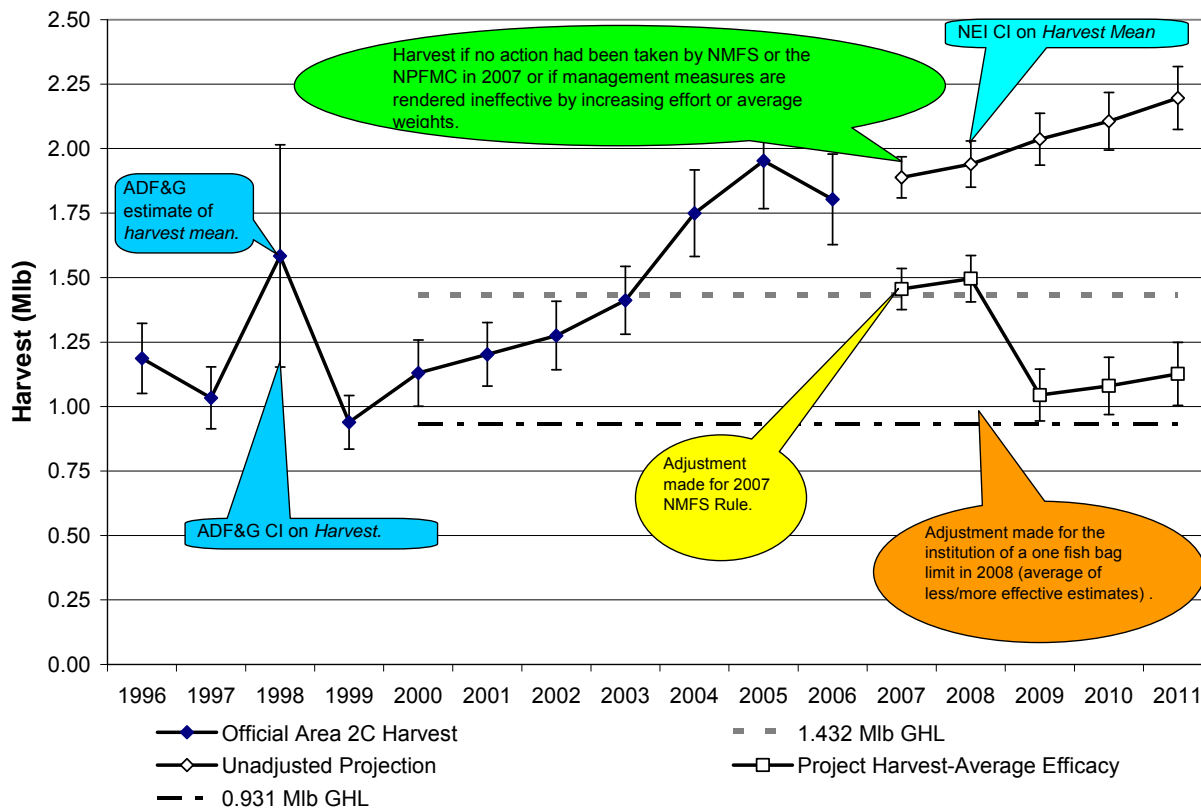


Figure A4 Historic Area 2C harvests compared with model estimates of the mean of future harvests adjusted for a 1-fish bag limit in 2009

Source: NEI Estimates, 2008.

### Harvest Estimates for Area 3A

For Area 2C the analysis projects unadjusted harvest and associated 95 percent confidence intervals between 2007 and 2011. The unadjusted harvest total would be expected to increase from 3.518 Mlb to 3.973 Mlb, or 12.9 percent, between 2007 and 2011 without any management changes (see Table A3). The 95 percent confidence interval for harvest mean in 2007 is 3.369 to 3.666 Mlb while the 95 percent confidence interval for 2011 is 3.751 and 4.196.

**Table A6 Mean Area 3A harvest estimates unadjusted for management measures**

Year	ADF&G's Mean Harvest Estimate (Mlb)	Model Estimate (Mlb) of Mean Harvest (Unadjusted for Management Measures)	Standard Error (Mlb)	Lower 95 Percent Confidence Interval (Mlb)	Upper 95 Percent Confidence Interval (Mlb)
1996	2.822	2.771	0.042	2.688	2.853
1997	3.413	2.856	0.034	2.789	2.923
1998	2.985	2.976	0.028	2.921	3.031
1999	2.533	2.745	0.024	2.698	2.792
2000	3.140	3.096	0.024	3.050	3.143
2001	3.132	3.414	0.027	3.361	3.467
2002	2.724	3.022	0.033	2.957	3.087
2003	3.382	3.310	0.041	3.230	3.389
2004	3.668	3.710	0.049	3.614	3.806
2005	3.689	3.351	0.058	3.239	3.464
2006	3.664	3.698	0.067	3.567	3.828
2007		3.518	0.076	3.369	3.666
2008		3.764	0.085	3.597	3.930
2009		3.886	0.094	3.701	4.071
2010		3.877	0.104	3.673	4.080
2011		3.973	0.113	3.751	4.196

Source: NEI Estimates, 2008.

The analysis adjusts the Area 3A estimates of 2007-2011 harvest by the estimated effect of the skipper and crew ban on harvest which ADF&G enacted in 2007. The October 2007 *Draft EA/RIR/IRFA for a Regulatory Amendment to Implement Management Measures for the Charter Fishery for Pacific Halibut in Area 3A* noted that a skipper and crew ban on harvest could reduce harvest by approximately 10.4 percent if skipper and crew have been reporting their harvest as charter under the SWHS. As a result, the analysis shifts the ARIMA (2,1,1) model estimates downward by 10.4 percent for each estimate between 2007 and 2011 as the harvest data from 1996 to 2006 do not include a skipper and crew ban. The adjusted harvest estimates are for harvest to grow from 3.152 Mlb in 2007 to 3.560 Mlb in 2011. If skipper and crew have not been reporting their harvest under the charter category in the SWHS then projected harvest will most likely mirror the original ARIMA (2,1,1) projection without any adjustments.

**Table A7 Unadjusted and adjusted estimates<sup>110</sup> of mean harvest in Area 3A with confidence intervals (Mlb)**

Year	Unadjusted for Post-2006 Management Measures			Adjusted for Post-2006 Management Measures <sup>111</sup>		
	Model Estimate of Mean Harvest	L95%CI	U95%CI	Model Estimate of Mean Harvest	L95%CI	U95%CI
2007	3.518	3.369	3.666	3.152	3.003	3.300
2008	3.764	3.597	3.930	3.372	3.206	3.539
2009	3.886	3.701	4.071	3.482	3.297	3.667
2010	3.877	3.673	4.080	3.473	3.270	3.677
2011	3.973	3.751	4.196	3.560	3.338	3.782

Source: NEI Estimates, 2008.

<sup>110</sup> Includes the 32" maximum length limit on the second fish in an angler's daily bag limit in 2007 and assumes the institution of a one fish bag limit in 2008 through 2011.

<sup>111</sup> Post-2006 management measures are assumed to include a state ban on the harvest of halibut by skipper and crew while on trips with paying clients.

Figure A5 shows predicted mean charter harvests and the shift associated with the ban on skipper and crew harvest as compared to the 3.65 Mlb GHL for Area 3A. The model predicts that with the ban on skipper and crew harvest, the mean estimated charter harvest is likely to stay under the Area GHL.

*CAVEATS: The accuracy of the adjusted harvest projections in both Areas are subject to certain caveats. Charter harvest in Area 3A depends on whether or not skipper and crew have been reporting their halibut harvest as charter harvest. If they have been reporting it (as assumed in this analysis) then harvest is expected to be generally near or below the GHL. If skippers and crew have not been reporting their harvests while under charter in the SHWS, then no reduction in harvest from the skipper and crew ban on retaining halibut is expected. Under those circumstances actual harvest in Area 3A will more closely match the unadjusted harvest projection, which will exceed the GHL.*

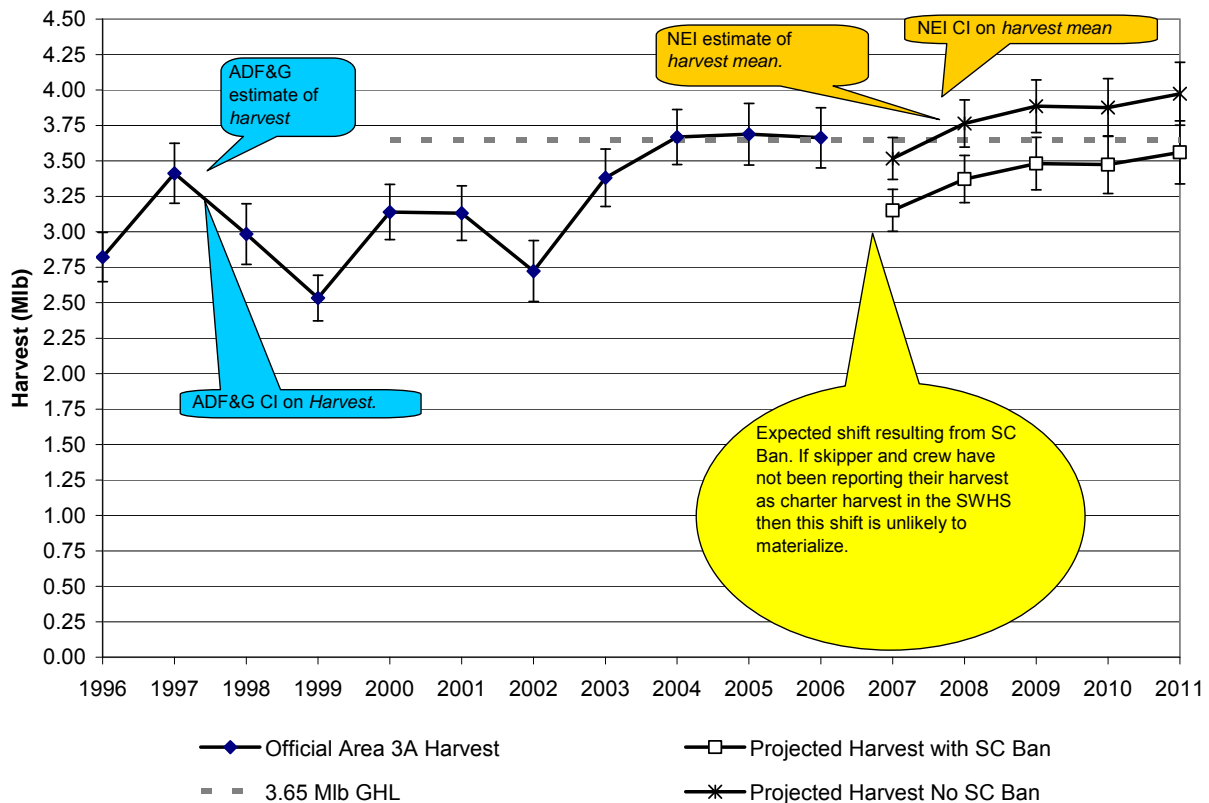


Figure A5 Past Area 3A harvests compared with model estimates of the mean of future harvests adjusted for actual 2007 management measures and expected 2008 management measures

Source: NEI Estimates, 2008.

## 8 Appendix B: Summary of Economic Impacts by Sector

### 8.1 Charter and Commercial Setline Sectors

The charter sector is composed of business operators who are licensed by the State of Alaska to provide charter 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 client needs 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. Their clients often stay at the lodge and take halibut trips as part of their wilderness adventure. Also, a limited number of charter businesses own floating lodges where clients are housed on a larger vessel and may use smaller vessels to fish for halibut. Even with the variety of charter business structures, the fishing vessels used to take clients fishing are typically small vessels (e.g. six-pack vessels). However, some larger vessels are currently being used in the fleet to carry more than six clients.

Clients of the different types of businesses would be impacted differently depending on the allocation and management measures that are implemented. For example, clients that are on a cruise may have half a day free to take a charter trip. These individuals do not have enough free time to take a whole day trip, so the half trip better suits their needs.

Some of guided anglers are less interested in taking home a lot of halibut (because of storage and shipping issues/expenses) and are more interested in the Alaska fishing experience. They would not be less likely to be affected by a reduced bag limit. Clients that are local to the area may be more interested in harvesting halibut for the freezer, and use the charter services as a means to access the resource. Their demand for a trip may be more impacted by a reduction in the daily bag limit.

Criddle (2004, 2006) described four types of management combinations for a halibut fishery shared by a commercial and charter sector. One combination provided an example of when the commercial fishery was managed under an IFQ-based system and the charter sector was managed under a regulated open access sport fishery. Under the regulated open access system, it is assumed that the charter sector's harvests are controlled by some combination of management measures. Those management measures could include gear restrictions, bag limits, possession limits, size restrictions, and closures. Criddle concluded that when a sportfishing charter fleet is composed of small homogeneous charter businesses, an increase in demand for trips would result in an increase in trip prices, in the short-run. Long-run effects depend on the types of management measures used to constrain charter harvests. Size limits, bag limits, annual harvest limits, line limits, and prohibition on captain and crew harvests, if some of the fish went to the clients, could reduce the angler or operator surpluses generated from the trips. Seasonal closures, restrictions on where fish is allowed, or limits on the number of clients are examples of management measures that could increase the costs of providing trips.

The proposed charter LEP program is not expected to limit the harvest of halibut from charter vessels, in the near term. The charter LEP may slow the rate at which effort in the fishery increases and help protect existing operations from competition associated with additional businesses. However, the excess capacity in the charter LEP is not expected to limit the amount of halibut the charter sector can harvest, at least in the near term. It is anticipated that all rents in the charter fleet would be dissipated under the charter LEP.

Over time, increases in demand for charter trips are not expected to impact the commercial sector. If the proposed management measures restrict charter harvests to its allocation, increased demand for charter trips would be offset by more restrictive management measures. Some of the proposed measures like bag

limits and size limits are expected to reduce client demand by reducing the angler surplus derived from a trip. The commercial sector would only be negatively impacted if the charter sector is not constrained to its allocation by additional management measures or if the charter sector is able to convince the Council and the Secretary to increase<sup>112</sup> its allocation.

The Council has also approved allowing charter LEP holders to lease GAF from the commercial sector. It is not possible to predict the magnitude of halibut that would be transferred under the preferred alternative. However, for transfers to occur, the commercial harvester must agree to the transfer, and the charter business must pay a sufficient amount for the halibut to offset the forgone value of commercial net revenues (Criddle 2006). Because the charter operators do not benefit from consumer surplus and commercial harvesters do not benefit from postharvest surplus they are not considered when determining whether to buy or sell IFQ.

Charter businesses that purchase GAF from the commercial sector would realize increased costs. Those costs would be passed on to charter clients through higher trip prices. The increased costs and prices are expected to allow charter businesses to earn normal profits in the long run.

Changes in stock abundance also impact the charter and commercial sectors. Criddle (2006) notes that:

*moderate fluctuations in stock abundance or in ex-vessel demand for commercial catch will not affect the total net benefits of sportfishing if the allocation between the commercial and sport fisheries is a fixed quota. If the allocation is percentage based, marginal increases in stock abundance will lead to short-term gains to charter operators while marginal decreases will lead to short-term losses.*

Because this amendment assumes that a combined commercial and charter catch limit would be set annually by the IPHC, both changes in stock abundance and increased harvest by the unguided sport sector, bycatch mortality, personal use, subsistence, and wastage would reduce the commercial allocation if the charter sector was allocated a fixed number of pounds. If the charter sector is allocated a percentage of the combined commercial and charter catch limit (the preferred alternative), both the commercial and charter allocations would decrease when the combined catch limit is reduced. If the combined catch limit increases, both sectors would receive a larger allocation. If the charter sector is allocated a fixed number of pounds, only the commercial sector's allocation would vary when the combined commercial and charter catch limit fluctuates.

Impacts of moderate fluctuations in stock abundance would lead to changes in the commercial quota under a fixed or percentage based charter allocation. The changes in commercial quota would directly alter the magnitude of commercial harvest. Changes in the amount of halibut harvested by the commercial sector would impact ex-vessel prices, commercial net revenue, and post harvest surplus. Given research conducted by Herrmann et al on the price flexibility of Alaska halibut, the changes in ex-vessel price that results from increasing or decreasing the amount of commercial harvest in Areas 2C and 3A as a result of this amendment are expected to be very small. The increase in ex-vessel prices, which results from a decline in Area 2C and 3A halibut on the market, is not expected to be sufficient to offset the loss in revenue associated with selling fewer pounds. Therefore, an allocation to the charter sector that decreases the commercial allocation is expected to result in a small increase in ex-vessel price, but an overall decline in the net revenue of commercial harvesters. Post harvest surplus is directly related to the quantity of halibut on the market, so a decrease in commercial harvests would lead to a decrease in post harvest surplus (Criddle, 2006). If the allocation to the charter sector is set at a level that reduces their harvest during periods when the combined commercial and charter catch limit is steady, the commercial harvest would be increased and post harvest surplus would increase.

Stock fluctuations may impact the asset value of QS held by commercial harvesters. If the changes to halibut stocks in Areas 2C and 3A occur frequently and are relatively small, they are not expected to

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<sup>112</sup> It should also be noted that the commercial sector would benefit if they could convince the Council to increase their allocation.

impact QS values. However, if the stock size is expected to increase or decrease for a longer period of time it would impact QS asset values. In that situation, a decrease in stock size would reduce QS values and an increase in stock size would increase QS values. Redistributing the amount of halibut that is assigned to the charter sector could have a similar impact on QS values. Because the asset value of QS is determined by the net revenue stream that is generated from the QS, if the charter allocation alters that net revenue over the long term it would impact the QS values. So, a long term allocation to the charter sector that reduces the commercial harvest would also tend to reduce QS values. QS values could also be reduced by other market conditions that impact ex-vessel demand. For example, increased farm raised production of halibut (or other close substitutes for halibut) could reduce the ex-vessel value of halibut and reduce QS values (Criddle, 2006).

Moderate stock fluctuations are not expected to change angler success rates or the total amount of halibut harvested by charter clients. Charter LEP holders should still be able to take clients to areas where there are sufficient halibut to have a realistic chance to fill their bag limits, if the pool of halibut is relatively static. Local area depletion has been a concern for some locations in the past, but no information has been presented that those concerns have ever lead to a decline in areawide harvests for either the commercial or charter sectors. The charter sector has harvested close to or above their GHF and the commercial sector has always harvested close to their annual IFQ allocation.

Modest increases in the stock abundance of halibut would result in more halibut being available to the commercial sector and would not affect the amount of halibut available to the charter sector under a fixed pound allocation. 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).

## 8.2 Charter Clients

Charter client trips would not be constrained by the amount of halibut available to their sector in-season under the status quo. However, demand for charter trips could decline as more restrictive management measures are imposed (e.g., a one fish bag limit in Area 2C). Charter LEP holders would change the number of trips they offer or take more clients per trip to meet client demand under the charter LEP until the fleet is at full capacity. Because of the excess capacity that is expected to exist under the charter LEP, at least in the short term, charter clients are expected to pay prices for trips that would allow the charter LEP holders to earn normal profits (NPFMC 2006a). Charter LEP holders would not raise trip prices to earn economic rents, because of the competition that would exist for clients. In the event that the charter LEP ever does become a constraint on the number of clients that could fish halibut, increases in trip demand could lead to higher trip prices.

Differential trip prices could result if clients wanted to use GAF to relax harvest restrictions. For example, if a client wanted to harvest 2-fish in Area 2C, they may need to compensate the charter operator for the additional cost associated with the lease of the GAF. The pricing structures for various types of trips are unknown. However, the use of GAF would increase trip costs and those costs are expected to be passed on to the client. Charter LEP holders whose clients are willing to pay the higher cost are more likely to lease the GAF. These businesses could offer additional services (e.g., a lodge) that help spread the cost over more amenities, or they could cater to clients that are willing to pay a fee in addition to the base trip price for the privilege of retaining more or larger halibut.<sup>113</sup>

Because of the structure of the charter industry and the competition for charter clients, charter LEP holders are expected set trip prices at levels that eliminate excess profits, all else equal. Since charter LEP holders are not expected to generate long-run producer surplus, the charter clients may be expected to generate all of the long-run net benefits for the charter sector.

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<sup>113</sup> Assumes that the moratorium will not constrain the number of trip available. It also assumes that demand will be relatively static and the charter operators provide a relatively homogeneous product.

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.

Status quo regulations are expected to be more restrictive in Area 2C than in Area 3A. After 2007, we have assumed that a two-fish bag limit with one fish no greater than 32 inches would be in place in Area 2C. Those management measures are expected to reduce both consumer demand and consumer surplus more than the regulations in place for Area 3A. In Area 3A the charter clients would remain under a two-fish bag limit with no size limit on the second fish. The number of halibut that may be harvested by a client during the year is not further regulated in Area 3A. Because of the different management measures in place for the two areas, clients that have the opportunity may choose to take a trip in Area 3A instead of Area 2C. This behavior could shift demand from Area 2C to Area 3A. If non-residents increase the percentage of trips they take in Area 3A, overall consumer surplus may increase more than if participation patterns remained static.

We assume that the charter LEP is not a constraint to persons booking a trip. Competition for clients is expected to keep trip prices at a level that allows charter would allow LEP holders to only earn normal profits. All else being equal, the price of trips should not increase as a result of the status quo management measures. Seasonal discounts may continue to be offered, especially in Area 3A, as charter LEP holders try to attract clients during the non-peak seasons. Discounted trips have historically been available before mid-June and after mid-August.

McDowell Group Inc. (2007) estimated that 1.7 million out-of-state visitors came to Alaska between May and September 2007. This represents an increase of 43 percent increase over 2001 levels. The increase from 2006 was 5.1 percent. Over 95 percent of travelers were on trips that included some pleasure activities. The increase was reported to be largely driven by increases in cruise ship passengers. Over 48 percent of the 2007 visitors (827,800), in the summer of 2007, arrived in the Alaska via cruise ship. A slightly larger percentage than arrived via air. The trend has been to more visitors in the 55 to 64 age group. They represented 11 percent of the visitors in 1993 and 20 percent of the visitors in 2006. Perhaps as a result of more persons in the “baby boomer” age group traveling to Alaska the household income of the average tourist increased from about \$70,000 in 1993/94 to \$103,000 in 2006/07. The higher levels of disposable income provides consumers more choices of where and when to travel. Other reasons people may be electing to vacation in Alaska is the relatively weak U.S. dollar, concerns about safety when traveling outside of the U.S., and people living longer and more active lives. All of these issues could influence a person’s decision to take a charter trip when visiting Alaska.

### **8.3 Halibut Processors**

Halibut processing takes place in both the commercial and charter sectors. Halibut harvested under Class B, C, or D quota shares in the commercial sector are sold to a registered halibut buyer by the IFQ holder. The halibut are then processed for long term storage or sold fresh to markets. Halibut harvested under Class A quota shares may be processed aboard the harvesting vessel. Persons processing halibut caught by charter clients may not resell the fish. Instead, they provide a service to the “owners” of the halibut so that the meat can be transported without spoiling. As part of the processing service they also, generally, divide halibut fillets into portion sized pieces before the halibut is vacuum packaged and frozen.

Firms may process both commercially harvested halibut for resale and charter harvested halibut for clients. Net profits for these firms, by mode of operation, are not known. So it is not possible to determine

whether they would generate additional net revenue if the charter or commercial sectors were allocated more halibut. Processors that only provide services to one of the sectors would likely prefer that sector's allocation not be reduced.

Commercial Processing: As stated earlier, in the commercial sector, halibut harvested under Class B, Class C, or Class D QS cannot be processed on the harvesting vessel<sup>114</sup>. The QS units in these classes are designated as catcher vessel shares and the halibut harvested under those QS units must be sold to a registered halibut buyer. Halibut harvested under Class A IFQs may be processed on the vessel where it was harvested. Freezer vessels used to harvest Class A shares may be any length. It is assumed that most of the Class A halibut harvested in the future will be processed onboard the harvesting vessel. So the economic benefits that accrue to the first processor would be earned by the QS holder. According to NMFS reports on the amount of Class A QS held (<http://www.fakr.noaa.gov/ram/ifqreports.htm>), about 21 percent of the 2C QS is Class A and 26 percent of the 3A QS is Class A. The remaining 79 percent of 2C halibut quota and 74 percent of 3A quota would need to be processed after the fish leave the harvesting vessel. Depending on market conditions, the fish harvested under any QS Class could either be sent into the retail market fresh, frozen, or processed using another method (e.g. smoked).

The total income derived from commercial halibut processing is not known. Key informants have indicated that the processors may be charging from \$1.35 to \$2.00 per pound to custom process halibut<sup>115</sup>. Custom processing fees are assumed to cover the costs of processing and generate some unknown amount of net revenue. Costs paid to have halibut custom processed are not assumed to represent the benefits (first wholesale price minus the costs to purchase and process the fish) that processors will derive from selling the fish.

The commercial halibut fishery was allocated 6.2 M. Lb. of halibut in Area 2C and 24.2 M. Lb. in Area 3A, during 2008. Assuming all of the halibut were processed using custom processors at \$1.75 per pound, the income generated would be \$11.8 million in Area 2C and \$41.6 million in Area 3A. Those revenues are not expected to represent the total value that halibut processors/sellers generate from the fish. First, it is unrealistic to assume that all of the halibut are custom processed into frozen fillets. Second, the benefits generated in the processing and marketing of halibut accrue beyond the first processor.

The postharvest surplus of halibut includes all levels of processing and marketing through final retail. It also includes the consumer surplus that is enjoyed by the final consumer of the fish. Because postharvest surplus of halibut is unknown, some general information is provided on the difference between ex-vessel prices and the retail price of halibut. The retail price of a whole<sup>116</sup> halibut from the Pike Place Fish Market in Seattle was \$9.99 per pound<sup>117</sup> (\$17.99 per pound for fillets) on May 27, 2008. The ex-vessel price of halibut in May 2008 was about \$4.00 per pound<sup>118</sup> in Sitka. The difference between the actual ex-vessel price paid for halibut and the price of the fish sold to a final consumer represents the expenditures and profits that persons beyond the first wholesaler incur or generate from halibut. If the examples presented above are typical of the overall prices, the difference between ex-vessel prices and final retail prices could be about \$6.00 per pound. Based on the example prices above, halibut harvested in Area 2C may generate \$37 million above the ex-vessel price. In Area 3A the revenue generated may be \$145 million. These examples are not intended to represent estimates of the total value. They are provided to

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<sup>114</sup> Class B shares may be harvested using a catcher vessel that is greater than 60' LOA. Class C shares may only be harvested on a catcher vessel that is less than or equal to 60' LOA. Class D shares may only be harvested from a catcher vessel that is less than or equal to 35' LOA. Federal regulations prohibit the processing of halibut onboard vessels fishing under these classes of QS.

<sup>115</sup> Custom processing is when an entity is contracted to process halibut for another entity but does not take ownership of the fish.

<sup>116</sup> Whole fish have been gutted and bled.

<sup>117</sup> Prices according to the Pike Place Market website. [www.pikeplacefish.com/store\\_product\\_1084.html](http://www.pikeplacefish.com/store_product_1084.html).

<sup>118</sup> The price per pound of halibut under 40 pounds was less than \$4.00 and the price of larger halibut was over \$4.00.



show the difference in first wholesale and retail prices for specific locations during May 2008. Those prices may not reflect the overall average ex-vessel and retail prices of halibut for the year across the United States. For example, internet and local grocery store advertisements during July 2008 report halibut prices over \$30 per pound<sup>119</sup>. Publix supermarkets in the Southeastern U.S. were selling fresh halibut for \$8.99 per 6 ounce serving during July 2008. However, retail prices for halibut can often be found for \$20 per pound or less. For example, the week of July 13<sup>th</sup> Fred Meyer offered fresh halibut portions on sale for \$12.99 per pound. The range of sales prices and the variety of products produced from halibut precludes the analyst from providing accurate estimates of the net revenue generated by processors and retailers of commercially harvested Alaska halibut without collecting detailed information that is currently unavailable.

Charter Processing: In most ports, halibut harvested while charter fishing may be processed for a fee if the clients cannot or do not wish to process the fish themselves or the charter operator does not provide the service as part of their package. Examples of the fees charged to freeze and vacuum pack halibut in Southeast and Southcentral Alaska communities during 2008 ranged from \$1.00 to \$1.35 per pound, incoming weights. These fees were taken from processor's websites. Not all of the firms that process charter harvested halibut were available, but the fees reported likely cover the range of the majority of halibut processed by charter vessels. Processors also offer other services to meet client demand. For example, the fish could be flash frozen for an additional charge (about \$0.25 per pound). Filleting the halibut before it is packaged and frozen typically added an additional \$0.10 to \$0.15 per pound to the processing cost. If a client only wanted the fish vacuum packed, the cost was typically reported to be \$0.75 to \$0.95 per pound. To have the halibut only frozen was reported to cost about \$0.60 to \$0.75 per pound in 3A communities and \$0.25 to \$0.50 in 2C communities. It is not known why the cost of only freezing the fish varied this much between 2C and 3A processors. One reason may be that only two processors were found that reported this service during the internet search. A larger sample size may have resulted in the costs of freezing halibut in the two areas being closer. If a client wanted the halibut processed, packaged, and shipped to their home, the client may expect to pay about \$4.50 to \$6.00 per pound according to processor's web sites.

It is not known how much of the halibut harvested by charter clients is processed at commercial facilities. Because of the distribution of resident and non-resident charter clients fishing in 2C and 3A it is likely that a higher percentage of the halibut harvested in 2C is frozen outside the harvester's home. Non-residents that are not staying in a lodge may need to hire a processor to care for their catch. Non-residents staying at a lodge will likely have their halibut processed as part of the overall cost of their trip. Some portion of the resident halibut harvesters will also employ commercial processors for the convenience or because they will not return home soon enough to keep fresh fish without concerns of spoilage.

Because we do not know the amount of halibut harvested by clients on charter vessels or the cost each person pays for processing their catch, we could assume the each halibut was cleaned and dressed by the charter operator before it was delivered to the processor and the processing fee was \$1 per pound incoming weight. If 0.9 Mlb of halibut were delivered to be processed<sup>120</sup> in 2C, the total revenue generated would be \$0.9 million. In area 3A, if 1.8 Mlb of fillets were processed the processor gross revenue would be \$1.8 million. These estimates cannot be directly compared to the \$8.95 million for marine recreational fishing processing in 2006 reported by Gentner et al (2008), because their report was not specific to halibut harvested from charter vessels.

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<sup>119</sup> <http://www.gortonsfreshseafood.com/Gourmet-Fresh-Fish/Halibut-Selects.aspx>

<sup>120</sup> This assumed that halibut were filleted before they were taken to the processor (about 50 percent of the whole weight), all halibut were commercially processed, and the charter sector harvested about 1.8 Mlbs in 2C. We would expect these assumptions to overestimate the charter processing revenues because not all halibut would be commercially processed.

If charter clients all paid \$6.00 per pound to have their fish processed, packaged, and shipped to their home, in Area 2C the cost would be \$5.4 million to have 0.9 Mlb shipped. In Area 3A the cost would be about \$10.8 million.

The costs/revenues discussed in this section are provided to show examples of the fees charged by processors and the gross revenues they may earn as a result of those fees. The results were based on several assumptions associated with the amount of halibut that would be processed and the average cost of processing. Neither of these assumptions can be verified with data that are currently available.

Commercial processors have indicated that halibut is important to their businesses because it helps to keep product flowing through the plant when other fisheries are closed or deliveries are slow. The stability that halibut provides these processors was sighted as important to their overall business. If halibut were not available almost year-around, it would have negative impacts on the number of days the processing facility is open. This may have negative spillover impacts (lower prices or no market for their harvest) on other small fisheries that may lose buyers. It is likely that processors of halibut harvested from charter vessels would make similar arguments about the importance of halibut to the profitability of their firm.

## **8.4 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 would decrease the amount of halibut available to consumers. Decreases in the amount available would result in increases in halibut prices, all else being equal. As stated earlier, the increase in ex-vessel price that would result from decreased supply is 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 would decrease consumer surplus (Criddle 2006). The exact amount of the decrease surplus has not been estimated and is outside the scope of this analysis.

Allowing the charter sector to lease commercial IFQ would decrease consumer surplus, if transfers occur. The leases would reduce the amount of halibut available to halibut consumers. Because of the direct relationship between consumer surplus and quantity supplied, benefits to consumers of commercial halibut would be reduced.

## **8.5 Communities**

Economic activity resulting from the charter and commercial halibut fisheries generates income for residents of the communities where the expenditures occur. Employment is also created in communities that provide goods and services to the fishing sectors.

The regional economic benefits under the status quo would likely differ from those under an allocation to the charter sector that imposes additional management measures in future years. However, changes in regional economic benefits generally do not cause changes in net national benefits.

The charter LEP 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 would be offset, at least to some degree, by the increased activity from the other sector. When the amount of fish available to both sectors decreases, as happened in Area 2C in 2008, the activity of both sectors is reduced. Because the activity of both sector's is reduced the regional benefits from the fisheries would decline, because the variable costs of the fleets are reduced.

Under the status quo, the amount of personal income and jobs generated by the charter sector is expected to increase in Area 3A in the long-run. In Area 2C the sector would experience declines in the short-term, as a result of stricter management measures imposed to keep the sector within the GHM (Table B-1). If the CEY increases to higher levels in the future the charter sector would be expected to increase the amount of personal income and jobs it creates above the 2008 levels.

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) were 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 would 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.

No options are being considered that limit the harvest of the charter sector within a fishing season. However, the management measures that were imposed on the Area 2C charter fleet starting are expected to reduce client demand for trips. When the number of trips taken is reduced by additional management measures, the charter sector would need fewer supplies and it would reduce expenditures within the communities that supply those goods. When the charter sector purchases fewer goods and services within the community it has a negative impact on their economy and employment, if the reductions are not offset by increased purchases by the commercial sector. While the allocation considered in this amendment would shift the amount of halibut available to the commercial sector and charter sectors, the overall near-term CEY reductions are likely to have a larger impact on the regional economies than shifting the available halibut among sectors. Individuals within those communities are more likely to be impacted by allocation shifts than the regional economy, because spending by the two sectors would to some extent offset each other. The total reduction in trips by community cannot be estimated. Information on the expenditures by charter LEP holders by community is also unavailable. Collecting that information would be both expensive and time consuming, and is outside the scope of this amendment.

Table B-2 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.

## **8.6 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 deducted from the CEY prior to determination of the proposed combined commercial and charter catch limit, the amount of halibut harvested by the commercial and charter sectors do not impact the halibut available to these groups.

Imposing a limit on the amount of halibut charter clients may harvest or reducing their bag limit 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 all else being equal. 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.



**Table B-2 Area 3A communities where halibut charter trips terminated in 2006, by number of anglers and week of the month**

Port of Landing	Week Fished During 2006																				TOTAL						
	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	
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 tri

## 9 Appendix C:

### Pacific Halibut Catch Sharing Plan for Area 2C & Area 3A

#### 1. Framework

This Plan constitutes a framework that shall be applied to the annual combined charter and commercial fishery catch limit for Area 2C and Area 3A, respectively, which is approved by the International Pacific Halibut Commission (IPHC) at its Annual Meeting. The framework shall be implemented in both IPHC regulations and domestic regulations (implemented by NMFS) as published in the *Federal Register*.

#### 2. Allocations

This Plan allocates 82.7 percent of the Area 2C combined charter and commercial halibut catch limit to the commercial longline fishery and 17.3 percent of the Area 2C combined fishery catch limit to the charter (guided sport) fishery, when the combined fishery catch equilibrium yield (CEY) is < 5 Mlb, and 84.9 percent of the Area 2C combined fishery catch limit to the commercial longline fishery and 15.1 percent of the Area 2C combined fishery catch limit to the charter (guided sport) fishery, when the combined fishery catch equilibrium yield (CEY) is ≥ 5 Mlb. The Council has determined that an acceptable range of charter halibut harvest is between 13.8 and 20.8 percent when the combined CEY is < 5 Mlb and between 11.6 and 18.6 when the combined CEY is ≥ 5 Mlb.

This Plan allocates 84.6 percent of the Area 3A combined fishery catch limit to the commercial longline fishery and 15.4 percent of the Area 3A combined fishery catch limit to the charter (guided sport) fishery, when the combined fishery catch equilibrium yield (CEY) is < 10 Mlb, and 86.0 percent of the Area 3A combined fishery catch limit to the commercial longline fishery and 14.0 percent of the Area 3A combined fishery catch limit to the charter (guided sport) fishery, when the combined fishery catch equilibrium yield (CEY) is ≥ 10 Mlb. The Council has determined that an acceptable range of charter halibut harvest is between 11.9 percent and 18.9 percent when the combined CEY is < 5 Mlb and between 11.6 percent and 18.6 percent when the combined CEY is ≥ 10 Mlb.

These allocations may be changed only by action of the Council and subsequent federal rulemaking.

The suite of allocations and bag limit and size limit restrictions at designated tiers of combined fishery CEY are listed below for each regulatory area.

Area 2C				
Combined Fishery CEY (million lb)	Allocation	Charter Fishery Bag & Size Limit Regulations		
		If charter harvest within allocation range	If charter harvest projected to exceed allocation range	If charter harvest projected to be below allocation range
Tier 1 <5	Comm alloc = 82.7% Charter alloc = 17.3% Charter range = 13.8-20.8%	One fish	Maximum size limit imposed that brings harvest to <17.3%	One fish
Tier 2 ≥5 - <9	Comm alloc = 84.9% Charter alloc = 15.1% Charter range = 11.6-18.6%	One fish	Maximum size limit imposed that brings harvest to <15.1%	Two fish, but one must be less than 32" in length
Tier 3 ≥9 - <14	Comm alloc = 84.9% Charter alloc = 15.1% Charter range = 11.6-18.6%	Two fish, one must be less than 32" in length	One fish	Two fish
Tier 4 ≥14	Comm alloc = 84.9% Charter alloc = 15.1% Charter range = 11.6-18.6%	Two fish	Two fish, but one must be less than 32" in length	Two fish

Area 3A				
Combined Fishery CEY (million lb)	Allocation	Charter Fishery Bag & Size Limit Regulations		
		If charter harvest within allocation range	If charter harvest projected to exceed allocation range	If charter harvest projected to be below allocation range
Tier 1 <10	Comm alloc = 84.6% Charter alloc = 15.4% Charter range = 11.9-18.9%	One fish	Maximum size limit imposed that brings harvest to <15.4%	One fish
Tier 2 ≥10 but <20	Comm alloc = 86.0% Charter alloc = 14.0% Charter range = 10.5-17.5%	One fish	Maximum size limit imposed that brings harvest to <14.0%	Two fish, but one must be less than 32" in length
Tier 3 ≥20 but <27	Comm alloc = 86.0% Charter alloc = 14.0% Charter range = 10.5-17.5%	Two fish, one must be less than 32" in length	One fish	Two fish
Tier 4 ≥27	Comm alloc = 86.0% Charter alloc = 14.0% Charter range = 10.5-17.5%	Two fish	Two fish, but one must be less than 32" in length	Two fish

### 3. Guided angler fish

The Plan includes the supplemental, individual use of commercial halibut Individual Fishing Quota (IFQ) to allow charter limited entry permit (LEP) holders to lease commercial IFQ, in order to provide additional anglers with harvesting opportunities, to equal limits in place for unguided anglers.

- A. Leasing commercial IFQ for conversion to Guided Angler Fish (GAF).
  1. An LEP (Limited Entry Permit) holder may lease IFQ for conversion to GAF for use on the LEP.
  2. Commercial halibut Quota Share (QS) holders may lease up to 1,500 pounds or 10% (whichever is greater) of their annual IFQ to LEP holders (including themselves) for use as GAF on LEPs. The same limitations apply if an IFQ holder chooses to lease to a Community Quota Entity (CQE). Any quota which a CQE holds, regardless of its origin, could be leased up to 100% to eligible residents of the CQE community.
  3. No more than 400 GAF may be assigned to an LEP endorsed for 6 or fewer clients.  
No more than 600 GAF may be assigned to an LEP endorsed for more than 6 clients.
- B. LEP holders harvesting GAF while participating in the charter halibut fishery are exempt from landing and use restrictions associated with commercial IFQ fishery, but subject to the landing and use provisions detailed below.
- C. 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).
- D. Subleasing of GAF would be prohibited.
- E. Conversion of GAF back to commercial sector.  
Unused GAF may revert back to pounds of IFQ and be subject to the underage provisions applicable to their underlying commercial QS either automatically on November 1 of each year or upon the request of the GAF holder if such request is made to NMFS in writing prior to November 1 of each year.
- F. GAF derived from commercial QS may not be used to harvest fish in excess of the non-charter bag limit on any given day.
- G. Charter operators landing GAF on private property (e.g., lodges) and motherships would be required to allow ADF&G samplers/enforcement personnel access to the point of landing.
- H. Commercial and charter fishing may not be conducted from the same vessel on the same day.



## **5. Procedures for Implementation**

The charter allocation, along with associated charter fishery bag and size limit restrictions, and the commercial allocation that are identified in this Plan for Areas 2C and 3A and approved by the IPHC will be implemented in annual IPHC regulations. As needed, the Council and NMFS will develop regulations designed to govern the charter fisheries.

Rbaker  
MSullivan  
JDiCosimo  
MSullivan 5/31/2011  
MSullivan 6/22/11  
SKokkinakis 7/12/2011

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