# Appendix 1

# Social Impact Assessment: Bering Sea/Aleutian Islands Halibut Abundance-Based Management of Prohibited Species Catch Limits

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# Acronyms and Abbreviations

| | |
|---|---|
| ACDC | Adak Community Development Corporation |
| ADFG | Alaska Department of Fish and Game |
| AEB | Aleutians East Borough |
| AFA | American Fisheries Act |
| AFSC | Alaska Fisheries Science Center |
| AKFIN | Alaska Fisheries Information Network |
| ANCSA | Alaska Native Claims Settlement Act |
| APIA | Aleutian Pribilof Islands Association |
| APICDA | Aleutian Pribilof Islands Community Development Association |
| BBEDC | Bristol Bay Economic Development Corporation |
| BIA | Bureau of Indian Affairs |
| BSAI | Bering Sea/Aleutian Islands |
| BSIA | best scientific information available |
| CAS | Catch Accounting System |
| CBSFA | Central Bering Sea Fishermen's Association |
| CDQ | Community Development Quota |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| CFEC | Alaska Commercial Fisheries Entry Commission |
| COAR | Commercial Operator Annual Report |
| CP | catcher/processor |
| CQE | Community Quota Entity |
| CQN | Chaninik Qaluyat Nunivak |
| CSIS | Community Subsistence Information System (Alaska Department of Fish and Game) |
| CV | catcher vessel |
| CVRF | Coastal Villages Region Fund |
| DCED | (Alaska) Division of Community and Regional Economic Development |
| DEIS | Draft Environmental Impact Statement |
| EBS | Eastern Bering Sea |
| EDR | Economic Data Report |
| EIS | Environmental Impact Statement |
| EO | Executive Order |
| FCEY | Fishery Constant Exploitable Yield |
| FLPR | floating processor |
| FMP | Fishery Management Plan |
| FR | Federal Register |
| GOA | Gulf of Alaska |
| H&L | hook-and-line |
| IFQ | individual fishing quota |
| IPHC | International Pacific Halibut Commission |
| LLP | License Limitation Program |
| MSA | Metropolitan Statistical Area |
| NEPA | National Environmental Policy Act |
| NMFS | National Marine Fisheries Service |
| NOAA | National Oceanic and Atmospheric Administration |
| NPFMC | North Pacific Fishery Management Council |
| NSEDC | Norton Sound Economic Development Corporation |

| | |
|---|---|
| PCFA | principal components factor analysis |
| PSC | Prohibited Species Catch |
| RAM | Restricted Access Management |
| RIR | Regulatory Impact Review |
| SBPR | shore-based processor |
| SHARC | Subsistence Halibut Registration Certificate |
| SIA | Social Impact Assessment |
| SWHS | Statewide Harvest Survey |
| TAC | total allowable catch |
| TCEY | Total Constant Exploitable Yield |
| TLAS | trawl limited access sector |
| USFWS | United States Fish and Wildlife Service |
| VPSO | Village Public Safety Officer |
| YDFDA | Yukon Delta Fisheries Development Association |

# 1 Executive Summary

This social impact assessment (SIA) evaluates community and regional participation patterns in the Bering Sea/Aleutian Islands (BSAI) groundfish and halibut fisheries as well as potential community level impacts from the various action alternatives and the no-action alternative. Potential impacts to subsistence and sport halibut fisheries are also evaluated.

## 1.1.1 BSAI Groundfish Fishery Dependency and Vulnerability to Community-Level Impacts of the Proposed Action Alternatives among Alaska Communities

The initial screening criteria for the selection of Alaska communities for inclusion in the BSAI groundfish component of this SIA were designed to identify Alaska communities that had at least a minimal, ongoing level of engagement in the relevant BSAI groundfish fisheries, as measured by one or more of the following indicators in the primary dataset used for analysis: an annual average of one or more active BSAI groundfish Trawl Limited Access Sector (TLAS) catcher vessel(s), hook-and-line catcher vessel(s), Amendment 80 sector groundfish trawl catcher/processor(s), and/or groundfish hook-and-line catcher/processor(s) with a local ownership address that participated in the BSAI groundfish fisheries 2010-2018 inclusive; and/or an annual average of 0.5 or more locally operating shore-based processor(s) that processed BSAI groundfish from catcher vessels in the TLAS and/or hook-and-line sectors and/or deliveries of Community Development Quota (CDQ) groundfish harvested by catcher vessels from any sector (not just the TLAS and hook-and-line sectors) over the years 2010-2018 inclusive.

Using these initial screening criteria, 12 Alaska communities were selected for analysis as potentially substantially engaged in, and/or potentially substantially dependent on, the BSAI groundfish fishery sectors most likely to be directly affected by one or more of the proposed action alternatives. These Alaska communities are shown graphically in Table ES-1. Also shown in this table for reference is the level of engagement of these same 12 communities in the BSAI/Area 4 halibut catcher vessel and shore-based processing sectors. Not shown in this table is the level of engagement of Pacific Northwest communities, including the greater Seattle area, which has the highest level of engagement among all communities in all categories (except being the location of BSAI groundfish shore-based processing and BSAI/Area 4 halibut shore-based processing); Newport (Oregon), also not shown, has the second-highest level of engagement in the BSAI groundfish TLAS catcher vessel sector.

Vulnerability of communities to adverse community-level impacts from the proposed action alternatives is in part a function of dependence of the community on the potentially affected BSAI groundfish fisheries and the economic resiliency and diversity of the community. Dependency is influenced by the relative importance of the relevant BSAI groundfish fisheries to vessels participating directly in the fisheries in comparison to all area, species, and gear fisheries in which those same vessels participate (community sector vessel diversity); the relative importance of the relevant BSAI groundfish fisheries to all community resident-owned commercial fishing vessels participating in all area, species, and gear fisheries combined (community fleet diversity); the relative importance of the relevant BSAI groundfish processing to all locally operating processors participating in all area, species, and gear fisheries combined (community processor diversity); and the relative importance of the overall community fishery sector(s) within the larger community economic base both in terms of private sector business activity and public revenues (community economic diversity). Also important to adverse community-level impact outcomes and community resilience is the specific nature of local engagement in the potentially affected BSAI groundfish fishery sectors and alternative employment, income, business, and public revenue opportunities available within the community as a result of the location, scale, and relative economic diversity of the community. At their most extreme, potential adverse impacts associated with a proposed action could present a risk to fishing community sustained participation in the BSAI groundfish fisheries.

**Table ES-1. Graphic Representation of Potentially Affected Alaska BSAI Groundfish Communities Relative Annual Average Engagement in BSAI Groundfish and Halibut Fisheries, 2010-2018**

| Alaska Community | Relative Community Size | BSAI Groundfish Engagement | | | | | BSAI Halibut Engagement | |
|---|---|---|---|---|---|---|---|---|
| | | Local Ownership Address CVs | | Local Ownership Address CPs | | Shore-Based Processing Location | Local Ownership Address CVs | Shore-Based Processing Location |
| | | TLAS | Hook & Line* | Amend-ment 80 | Hook & Line | | | |
| **Adak** | ● | | | | | ● | | ○ |
| **Akutan** | ○ | | | | | ○ | ● | ○ |
| **Anchorage** | ⬤ | | | | ○ | ○ | ● | ⬤ |
| **Atka** | ● | | | | | ● | ● | ● |
| **Homer** | ○ | | ⬤ | | | | ⬤ | |
| **King Cove** | ● | | | | | ○ | | ○ |
| **Kodiak** | ○ | ⬤ | ● | | | ● | ⬤ | |
| **Nome** | ○ | | | | | ○ | ○ | ○ |
| **Petersburg** | ○ | | | | ○ | | | |
| **Sand Point** | ● | | | | | ● | | ○ |
| **Sitka** | ○ | | ○ | | | | ● | |
| **Unalaska/ Dutch Harbor** | ○ | | ○ | | | ⬤ | ○ | ⬤ |

**Key for Table ES-1**

| Type/Level of Engagement | ● | ○ | ⬤ |
|---|---|---|---|
| Community Size | 2010 population = less than 1,000 | 2010 population = 1,000 – 9,999 | 2010 population = 10,000 or more |
| BSAI Groundfish Catcher Vessel Participation | 2010-2018 annual avg. = 0.5 – 0.9 vessels | 2010-2018 annual avg. = 1.0 – 2.9 vessels | 2010-2018 annual avg. = 3.0 or more vessels |
| BSAI Groundfish Catcher/ Processor Participation | 2010-2018 annual avg. = 0.5 – 0.9 vessels | 2010-2018 annual avg. = 1.0 – 2.9 vessels | 2010-2018 annual avg. = 3.0 or more vessels |
| BSAI Groundfish Shore-Based Processing Participation | 2010-2018 annual avg. = 0.5 – 0.9 plants | 2010-2018 annual avg. = 1.0 – 1.9 plants | 2010-2018 annual avg. = 2.0 or more plants |
| BSAI Halibut Catcher Vessel Participation | 2010-2018 annual avg. = 1.0 – 4.9 vessels | 2010-2018 annual avg. = 5.0 – 9.9 vessels | 2010-2018 annual avg. = 10.0 or more vessels |
| BSAI Halibut Shore-Based Processing Participation | 2010-2018 annual avg. = 0.5 – 0.9 plants | 2010-2018 annual avg. = 1.0 – 1.9 plants | 2010-2018 annual avg. = 2.0 or more plants |

*Note: the only Alaska community not included in Table ES-1 that has BSAI groundfish values in the ranges shown in this key for Table ES-1 is Wasilla, with hook-and-line catcher vessel participation in the 0.5-0.9 annual average vessel category.*

The relative importance of the BSAI groundfish fisheries likely to be affected by the proposed alternatives within the larger local fisheries sector and within the larger local economic base varies widely among the engaged Alaska communities. Similarly, the socioeconomic structure of the engaged communities varies widely along with the relative diversity of their respective local economies. These conditions over the period 2010-2018 are summarized by region and community in the following sections., along with potential community level impacts associated with the proposed action alternatives and associated environmental justice concerns, as relevant.

## 1.1.2 BSAI Region Communities

### 1.1.2.1 Unalaska and Akutan

Unalaska and Akutan direct engagement in the relevant BSAI groundfish fisheries in the catcher vessel sector was limited to hook-and-line catcher vessels with Unalaska ownership addresses and in the shore-based processing sector to large, multi-species, multi-fishery BSAI groundfish shore-based processors operating in both communities. Unalaska and Akutan also derive substantial public revenues from BSAI groundfish landings by catcher vessels and related activities. Unalaska, unique among Alaska communities, also derives substantial public revenues from BSAI groundfish catcher/processors offloading/transferring processed product in the port (and from related economic activities).

Unalaska has a small resident-owned commercial fishing fleet. It is also not a CDQ community and as a result, the local fleet does not have direct access to CDQ quota to use as a stable underpinning or a hedge against their vulnerability to potential adverse impacts of proposed management alternatives in either the Pacific cod or halibut fisheries. For shore-based processors accepting relevant BSAI groundfish deliveries in Unalaska and Akutan combined, the ex-vessel value of these landings accounted for 82.8 percent of the ex-vessel value of relevant BSAI groundfish landings at all shore-based processors in Alaska combined. These landings accounted 6.8 percent of all ex-vessel value of landings at all processors operating in these two communities.

Unalaska, with its relatively well-developed fishery support service sector and its role as the major shipping port of the BSAI area, could experience indirect impacts from the proposed alternatives through a decline in economic activity related to the TLAS and/or hook-and-line catcher vessel fleets and/or Amendment 80 and/or hook-and-line catcher/processor fleets if port calls were to decline as a result of the proposed action.

#### Potential Environmental Justice Concerns

In Unalaska and Akutan processing workforces include a high proportion of minority employees. Impacts to processing workers could occur, depending on how specific plants and, importantly, their delivering fleets, adapt to changing conditions. While the dependency of these plants on the relevant BSAI groundfish deliveries is not high, it is not insignificant and economic dependency as measured by ex-vessel value of landings does not capture the importance a particular fishery may have in the overall annual cycle of the plant or the labor hour effort that may be needed for that fishery, as how labor-intensive processing a particular species or a given product form may be varies widely. It is not likely, however, that any of the proposed alternatives would result in any high and adverse impacts to processing workers in the form of substantial processor workforce reductions, given the relatively modest level of dependency of the plants in these communities on relevant BSAI groundfish deliveries, although a reduction in processing worker earnings through the loss of labor hours, including overtime hours, may occur.

### 1.1.2.2 Adak and Atka

Adak and Atka direct engagement in the relevant BSAI groundfish fisheries was limited a single shore-based processor operating in each community that accepted relevant BSAI groundfish deliveries. In both communities, deliveries took place in seven out of the nine years 2010-2018. While all revenue data associated with these processors are confidential, in the case of Atka, the Council's recent Amendment 113 analysis indicated that Aleutian Islands Pacific cod deliveries to the Atka plant were limited to incidental catch from a different target fishery as the plant otherwise focused on halibut and sablefish. Further, the Atka plant did not operate in 2018 and its future is uncertain. As a result, it is not likely that any of the proposed alternatives would directly and adversely affect the community of Atka.

The plant in Adak, in contrast, has historically been substantially dependent on Pacific cod based on delivery figures for 2002-2008 made public in previous Council documents through a waiver of confidentiality. While the Adak plant has been through many changes since 2008, it is generally understood that dependence on Pacific cod has remained very high. Adak has also been the continuing focus of a concerted effort to grow the fishery support service sector of the local economy, and BSAI groundfish vessel port calls constitute an important economic driver for this sector. Adak shore-based processing has faced, from the local perspective, a number of fishery management related challenges over the years, compounded by the basic logistical and economic challenges of operating in a local economy that remains in transition from that of relatively large military community to a small civilian community. Given the historic fragility/inconsistency of local shore-based processing operations, Adak is particularly vulnerable to adverse impacts related to the proposed action alternatives. The level of adverse impact will depend on the nature and success of behavioral adaptions of BSAI groundfish vessels and the local plant in response to the ultimately implemented proposed alternative. Whether adverse impacts related to any specific alternative would represent a significant threshold or tipping point for larger impacts of a cumulative nature in Adak is unknown at this time.

#### Potential Environmental Justice Concerns

Direct adverse impacts to Adak as a result of the proposed action alternatives, if any, would be focused on the shore-based processing sector. As in Unalaska and Akutan, processing workers in Adak have included a high proportion of minority employees. Additionally, as of 2017, 40.0 percent of Adak's residents were considered low-income, compared to 10.2 percent of Alaska's general population. To the extent that the proposed action alternatives would adversely impact local processing operations and result in a loss of employment and income opportunities, environmental justice would potentially be an issue of concern for the community of Adak.

### 1.1.2.3 Nome

Nome's direct engagement in the relevant BSAI groundfish fisheries in 2010-2018 was limited a single shore-based processor operating in the community that accepted relevant BSAI groundfish deliveries each of the nine years during this period. However, these deliveries included tomcod, which was used for bait, as well as Pacific cod. Engagement in the Pacific cod fishery in Nome, according to NSEDC management staff, is still in its infancy. Community level impacts from any of the proposed action alternatives on existing levels of fishery engagement are unlikely, but the potential impact of the proposed alternatives with respect to either facilitating or impeding the growth of Pacific cod fishery engagement is unknown.

### 1.1.2.4 Other CDQ Communities

CDQ entities and their constituent communities could be impacted by potential changes to the BSAI groundfish fisheries related to the proposed action alternatives in multiple ways, two of the most direct of

which are (1) through their quota holdings in the potentially affected BSAI groundfish fisheries and (2) through CDQ group investments in direct participation in the potentially affected industrial-scale groundfish fisheries, including catcher vessel, catcher/processor, and shore-based processor ownership interests.

It is also important to note that efforts directed toward exploration or development of a greater degree of direct engagement in the BSAI Pacific cod fishery through local small vessel fleets is underway in some CDQ communities, including Nome, Savoonga, and St. Paul, and has recently been contemplated in False Pass and Atka. It is also likely that the BSAI groundfish shore-based processing will occur in False Pass in the future, given recent increases to shore-based processing capacity in the community. At present the potential impact of the proposed action alternatives on these efforts, if any, are unclear.

## 1.1.3 GOA Region Communities

### 1.1.3.1 Anchorage and Kodiak

Anchorage is shown in the dataset as the community of ownership address for BSAI groundfish hook-and-line catcher/processors and the location of shore-based processors that accepted relevant deliveries of BSAI groundfish 2010-2018. Kodiak is shown in the data as the community of ownership address for BSAI groundfish TLAS catcher vessels and BSAI groundfish hook-and-line catcher vessels, as well as the location of shore-based processors that accepted relevant deliveries of BSAI groundfish during this time.

All first wholesale gross revenue data associated with Anchorage's engagement in the relevant sectors are confidential. However, a general knowledge of the industry, a review of the available data, and past Council analyses would suggest that at least some of the activity attributed to Anchorage is the result of inaccurate assignment of operating locations of processing plants and, in the case of catcher/processors, at least some of the ownership attributed to Anchorage is likely due to some CDQ entities basing their offices and fishery business support operations in Anchorage rather than in the CDQ regions themselves. The relatively modest level of engagement in the BSAI groundfish fishery combined with the size of Anchorage and the size and relative diversity of the local economy makes adverse community-level impacts from any of the proposed action alternatives unlikely.

Relevant BSAI groundfish ex-vessel gross revenues for the annual average of 4.3 active Kodiak TLAS vessels (10 unique vessels) accounted for approximately 0.46 percent of the average annual total ex-vessel gross revenues for all catcher vessels (for all areas, gears, and fisheries) with Kodiak ownership addresses over this same time period. It is important to note, however, that impacts to Kodiak ownership address BSAI groundfish TLAS vessels in particular could be substantial at the operational level, depending on the specific proposed action alternative selected for implementation.

While multiple Kodiak ownership address BSAI groundfish hook-and-line catcher vessels participated in the BSAI groundfish fishery over the course of three years 2010-2018, none did so in the five most recent years covered by the dataset. An annual average of 0.7 Kodiak shore-based processors accepted relevant BSAI groundfish deliveries 2010-2018, but none participated in five of the nine years during this time. Revenue data for the Kodiak BSAI groundfish hook-and-line catcher vessels and the BSAI groundfish shore-based processors are confidential, but given the intermittent nature of engagement in these two sectors and a general knowledge of the local fishing industry, it is assumed that their revenue contribution to local commercial fishing fleet and the local shore-based processing sector is minimal.

Kodiak has a robust fishery support service sector and while it is possible that some of these businesses could be adversely affected by implementation of one or more of the proposed action alternatives, this type of potential impact cannot be quantified with existing information. For Kodiak, the relatively modest level of engagement in the BSAI groundfish fishery combined with the size of the community (approximately 6,100 residents in 2010), the size and relative diversity of the local economy in general, and the fishery-

based component of the local economy in particular, makes adverse community-level impacts from any of the proposed action alternatives unlikely.

### 1.1.3.2 King Cove and Sand Point

King Cove and Sand Point were engaged in the BSAI groundfish fisheries most directly potentially affected by one or more of the proposed action alternatives exclusively through shore-based processing sector. King Cove and Sand Point have relatively small populations (938 and 976 residents, respectively, in 2010). Both have relatively large residential commercial fishing fleets and are the operating location of a single, relatively large multi-species shore-based processing plant participating in both BSAI and GOA fisheries.

The King Cove shore-based processor accepted landings of BSAI TLAS and/or hook-and-line caught groundfish each year during this period. While revenue data associated with King Cove's engagement in this sector are confidential, given a general knowledge of King Cove shore-based processing operations, it is assumed that the King Cove shore-based processor has little dependency on relevant BSAI groundfish landings relative to landings of all area, gear, and species fisheries combined. The Sand Point shore-based processor actively participated in the relevant BSAI groundfish fisheries in five of the nine years 2010-2018. Revenue data associated with Sand Point's engagement in this sector are confidential but given a general knowledge of Sand Point shore-based processing operations, it is assumed that the Sand Point shore-based processor has little dependency on the BSAI groundfish landings relevant to this analysis relative to landings the plant accepts from all area, gear, and species fisheries combined. For both communities, adverse community level impacts resulting from the implementation any one of the proposed action alternatives is considered unlikely.

### 1.1.3.3 Homer, Sitka, and Petersburg

Homer, Sitka, and Petersburg were engaged in the BSAI groundfish fisheries most directly potentially affected by one or more of the proposed action alternatives exclusively through having catcher vessels (Homer and Sitka) or catcher/processors (Petersburg) with local ownership addresses active in a relevant sector of the fishery.

Homer had an annual average of 5.3 BSAI groundfish hook-and-line catcher vessels with local ownership addresses for the period 2010-2018 (a total of 15 unique vessels). That was more than any other community in any state and these vessels accounted for roughly half of all the ex-vessel gross revenues for BSAI groundfish hook-and-line vessels with Alaska ownership addresses during this time period. However, associated revenues account for only 0.67 percent of the total ex-vessel gross revenues for all commercial fishing vessels with Homer ownership addresses participating in all area, gear, and species fisheries (i.e., the Homer "community fleet"). The relatively modest level of engagement in the BSAI groundfish fishery combined with the size of the community (approximately 5,000 residents in 2010), size and relative diversity of the local economy in general, and the fishery-based component of the local economy in particular, makes adverse community-level impacts from any of the proposed action alternatives unlikely. It is important to note, however, that impacts to Homer ownership address BSAI groundfish hook-and-line vessels in particular could be substantial at the operational level, depending on the specific proposed action alternative selected for implementation.

Sitka had annual average of approximately 1.2 BSAI groundfish hook-and-line catcher vessels with local ownership addresses over this period (a total of seven unique vessels), but none were active in the fishery in the most recent four years covered by the data (2015-2018). Ex-vessel gross revenue from the BSAI groundfish hook-and-line fishery accounted for 0.13 percent of the total ex-vessel gross revenues for all commercial fishing vessels with Sitka ownership addresses participating in all area, gear, and species fisheries (i.e., the Sitka "community fleet"). Given the limited dependency of the overall Sitka catcher

vessel fleet on the relevant BSAI groundfish fisheries, and the relative size and economic diversity of the City and Borough of Sitka in general (population approximately 8,900 in 2010) and its commercial fisheries in particular, it is unlikely that Sitka would experience adverse community-level impacts under any of the proposed action alternatives.

Petersburg had an annual average of 4.5 hook-and-line catcher/processors with local ownership addresses engaged in BSAI groundfish fishery over this period. However, none participated in the fishery in the three most recent years covered by the data. Petersburg also appears in the data as having one BSAI groundfish TLAS catcher vessel with a community ownership address active in the fishery in 2010, but there is no similar activity in the most recent eight years covered by the dataset. All revenues associated with these vessels are confidential. Given the lack of participation in relevant BSAI groundfish fisheries sectors in recent years, and the relative size and economic diversity of Petersburg in general (population approximately 2,950 in 2010) and its commercial fisheries in particular, it is unlikely that Petersburg would experience adverse community-level impacts under any of the proposed action alternatives.

### 1.1.4 BSAI Groundfish Fishery Dependency and Vulnerability to Community-Level Impacts of the Proposed Action Alternatives among Pacific Northwest Communities

Given the degree of centralization of ownership of the directly engaged BSAI groundfish fishery sectors in the Seattle MSA and the centralization of the support services provided by Seattle-based firms, potential adverse economic impacts associated with proposed action alternatives described in the DEIS to which this SIA is appended would largely accrue to the Seattle MSA in particular and the Pacific Northwest in general.

As noted in economic analysis in the DEIS, numerous variables influence the impacts of PSC limit reduction on groundfish sectors, including environmental, regulatory, and behavioral variables. While harvesters cannot directly impact environmental or regulatory variables, they can impact behavioral variables through halibut avoidance strategies, all of which come with avoidance costs. These avoidance strategies include search time looking for grounds with lower halibut bycatch, fishing less efficient areas where there are fewer halibut, and changing catch handling techniques such as deck sorting, among others. These costs, which impact net revenues, are incurred regardless of whether or not the PSC limit becomes a constraint and cannot be quantified with available data. Other costs associated with PSC reduction include foregone groundfish revenues if halibut becomes constraining. These costs impact gross revenues but quantifying costs of foregone groundfish revenue resulting from PSC reductions would be speculative and highly uncertain (see DEIS Section 6.3.2).

#### Potential Environmental Justice Concerns

In terms of absolute numbers (based on existing participation/engagement patterns), whatever adverse impacts related to BSAI groundfish TLAS catcher vessel, BSAI groundfish Amendment 80 catcher/processor, and hook-and-line catcher/processor direct employment and income that would occur as the result of implementation of the proposed action alternative ultimately selected for implementation would largely accrue to the Seattle MSA. No systematically collected demographic data for vessel crew are available. However, although more recent data are not available for the entire sector, to facilitate the social impact assessment for an earlier BSAI halibut PSC limit revisions analysis, employee demographic information-based 2014 Equal Employment Opportunity Commission data were supplied by four firms with catcher/processors operating in the Amendment 80 catcher/processor sector. Together, these firms accounted for more than half of (10 of 18) trawl catcher/processors operating that year in the BSAI groundfish fisheries. The demographic data supplied by those firms indicate that two-thirds of all employees working on the 10 catcher/processors represented in these data are minority employees. Minority representation is substantially higher for two of the job categories and in all but two job categories (captains and engineers) minority employees represented greater than 50 percent of all employees in that category. In

contrast, minority representation in the general Seattle MSA 2010 population was 32 percent (1,099,535 minority residents out of a total population of 3,439,809 residents). Given the demographic characteristics summarized here, if disproportionate high and adverse impacts were to accrue to the Seattle MSA ownership address BSAI groundfish Amendment 80 catcher/processor workforce due to implementation of a proposed action alternative, environmental justice would potentially be an issue of concern.

Of specific concern would be loss of income opportunities for crew related to increased expenses in operations with additional halibut avoidance measures, and/or more time away from home with time-consuming and/or labor-intensive avoidance measures. Although there are theoretically many more alternate employment and income opportunities for workers in a large urban area than in smaller communities or rural settings, there may not be comparable employment and earning potential ashore as is available to workers aboard these vessels, even in an otherwise robust job market, especially employees who have worked their way up from entry level positions.

## 1.2 Community Engagement, Dependence, Vulnerability, Resilience, and Risks to Fishing Community Sustained Participation in the Relevant BSAI Halibut Fisheries

The initial screening criteria for the selection of Alaska communities for inclusion in this portion of the social impact assessment were designed to identify those Alaska communities that had at least a minimal, ongoing level of engagement in the relevant BSAI/Area 4 halibut fishery, as measured by an annual average harvest engagement of 2.0 or more catcher vessels with local ownership addresses and/or communities with an annual average BSAI halibut processing engagement of 0.5 or more locally operating shore-based processors that accepted BSAI halibut deliveries over the years 2010-2018, inclusive.

Using these initial screening criteria, 21 Alaska communities in the BSAI region were selected for analysis as potentially substantially engaged in, and/or potentially substantially dependent on, the BSAI/Area 4 halibut fishery sectors most likely to be directly affected by one or more of the proposed action alternatives communities. A total of 17 of these Alaska communities were considered to be halibut-dependent and are shown graphically in Table ES-2. Not shown in this table is the level of engagement of Alaska communities outside of the BSAI region or Pacific Northwest communities.

The problematic nature of the no-action alternative for directed halibut fishery participants is inherently recognized in the Council's purpose and need statement. The potential for BSAI halibut-related community-level impacts from the proposed action alternatives in any given community is in part a function of present and future dependence of the community on the potentially affected BSAI halibut fisheries. Similar to what was described for relevant BSAI groundfish fisheries, dependency on the BSAI halibut fishery is influenced by the relative importance of BSAI halibut fisheries in the larger community fisheries sector(s), as well as the relative importance of the overall community fishery sector(s) within the larger community economic base (both in terms of private sector business activity and public revenues). Also important to community-level impact outcomes is the specific nature of local engagement in the potentially affected BSAI halibut fisheries and alternative employment, income, business, and public revenue opportunities available within the community as a result of the location, scale, and relative economic diversity of the community.

**Table ES-2.**
**Graphic Representation of Potentially Affected Alaska BSAI Halibut-Dependent Communities Annual Average Engagement in BSAI Halibut Fisheries**

| Community | CDQ Group | Demographic Characteristics | | | | Shore-Based Halibut Processing Location | Catcher Vessel Characteristics | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Community Size | Proportion of Total Population | | | | Number of Halibut CVs with Local Ownership Addresses | Halibut Ex-Vessel Gross Revenues as Percentage of Total Ex-Vessel Gross Revenues | |
| | | | Alaska Native | Minority | Low-Income | | | Halibut CVs Only | All Community CVs |
| **Adak** | (none) | ● | ● | ⬤ | ⬤ | ○ | | | |
| **Atka** | APICDA | ● | ⬤ | ⬤ | ● | ● | ● | ⬤ | ⬤ |
| **Akutan** | APICDA | ○ | ● | ⬤ | ○ | ○ | ● | ○ | ○ |
| **St. George** | APICDA | ● | ⬤ | ⬤ | ● | | ● | ⬤ | ⬤ |
| **Unalaska/ Dutch Harbor** | (none) | ○ | ● | ○ | ● | ⬤ | ○ | ○ | ○ |
| **St. Paul** | CBSFA | ● | ⬤ | ⬤ | ● | ○ | ⬤ | ⬤ | ⬤ |
| **Hooper Bay** | CVRF | ○ | ⬤ | ⬤ | ⬤ | | ● | ⬤ | Confidential |
| **Kipnuk** | CVRF | ● | ⬤ | ⬤ | ⬤ | | ○ | ⬤ | ● |
| **Mekoryuk** | CVRF | ● | ⬤ | ⬤ | ○ | | ⬤ | ⬤ | ⬤ |
| **Toksook Bay** | CVRF | ● | ⬤ | ⬤ | ○ | | ⬤ | ⬤ | ○ |

| Community | CDQ Group | Demographic Characteristics | | | | Shore-Based Halibut Processing Location | Catcher Vessel Characteristics | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Community Size | Proportion of Total Population | | | | Number of Halibut CVs with Local Ownership Addresses | Halibut Ex-Vessel Gross Revenues as Percentage of Total Ex-Vessel Gross Revenues | |
| | | | Alaska Native | Minority | Low-Income | | | Halibut CVs Only | All Community CVs |
| **Chefornak** | CVRF | ● | ⬤ | ⬤ | ○ | | ○ | | |
| **Newtok** | CVRF | ● | ⬤ | ⬤ | ⬤ | | ● | | |
| **Nightmute** | CVRF | ● | ⬤ | ⬤ | ⬤ | | ● | ⬤ | ● |
| **Quinhagak** | CVRF | ● | ⬤ | ⬤ | ⬤ | | ● | | |
| **Tununak** | CVRF | ● | ⬤ | ⬤ | ⬤ | | ⬤ | | |
| **Nome** | NSEDC | ○ | ○ | ○ | ● | ○ | ○ | ●* | ●* |
| **Savoonga** | NSEDC | ● | ⬤ | ⬤ | ⬤ | ○ | ⬤ | ⬤ | ⬤ |

**Note: Nome catcher vessel revenues combined with "all other NSEDC" (excluding Savoonga) to protect data confidentiality. Where halibut ex-vessel gross revenues are shown as lumped for more the one community, data confidentiality restrictions preclude showing data for the individual communities.*

**Key for Table ES-2**

| Type/Level of Engagement | ● | ○ | ⬤ |
|---|---|---|---|
| Community Size | 2010 population = less than 1,000 | 2010 population = 1,000 – 9,999 | 2010 population = 10,000 or more |
| Alaska Native and Minority Proportion | 2010 population = less than 50 percent | 2010 population = 50.0 – 74.9 percent | 2010 population = 75.0 or more percent |
| Low-Income Population Proportion | 2013-17 population = less than 15 percent | 2013-17 population = 15.0 – 24.9 percent | 2013-17 population = 25.0 or more percent |
| BSAI Halibut Shore-Based Processing Participation | 2010-2018 annual avg. = 0.5 – 0.9 plants | 2010-2018 annual avg. = 1.0 – 1.9 plants | 2010-2018 annual avg. = 2.0 or more plants |
| BSAI Halibut Catcher Vessel Participation | 2010-2018 annual avg. = 1.0 – 4.9 vessels | 2010-2018 annual avg. = 5.0 – 9.9 vessels | 2010-2018 annual avg. = 10.0 or more vessels |
| BSAI Halibut Ex-Vessel Gross Revenue Proportion | 2010-2018 annual avg. = less than 25 percent | 2010-2018 annual avg. = 25.0 – 49.9 percent | 2010-2018 annual avg. = 50.0 or more percent |

It is assumed that directed BSAI halibut fisheries, including the commercial, subsistence, and sport halibut fisheries, would potentially benefit from the various proposed alternatives relative to the degree that the BSAI halibut stock itself (halibut spawning stock biomass) would potentially benefit from these proposed actions, particularly in low abundance conditions, and, especially in the case of the commercial directed halibut fishery, the effective redistribution of overall allocations between sectors that would occur to greater or lesser degrees under the various alternatives. While to the extent that they would be felt, impacts to communities engaged in the BSAI groundfish fisheries would be immediate and adverse; potential impacts to communities engaged in the BSAI halibut fisheries, to the extent that they would be felt, would not (except for a de-facto reallocation of halibut between fisheries) be immediately apparent and the full extent of their beneficial impact would not be realized for several years.

## 1.2.1 Potential Differential Distribution of Impacts to Communities Engaged in the Commercial Halibut Fishery

### 1.2.1.1 Alaska Communities

Dependence of the total resident-owned catcher vessel fleet (all resident-owned commercial fishing vessels, not just resident-owned vessels that participated in the halibut fishery) for these communities varied widely, as the fleets of some communities are more exclusively focused on the halibut fishery than are others. St. Paul, the BSAI region community with the highest 2010-2018 annual average catcher vessel Area 4 halibut ex-vessel gross revenues (at approximately $2.5 million, over 40 percent higher than Unalaska, the next closest community in the BSAI region), was also the community with the second-highest percentage of community fleet dependency on BSAI halibut ex-vessel gross revenues (99.8 percent). The only community with a higher local fleet dependency on BSAI halibut ex-vessel gross revenues was Savoonga (at 100 percent), which features a smaller scale community fleet.

Among the communities or small groups of communities for which revenue totals can be disclosed, three other communities (Adak/Atka, St. George, and Mekoryuk) have local ownership address catcher vessels fleets that were 80 percent or more dependent on BSAI halibut ex-vessel gross revenues on an annual average basis for the years 2010-2018, while four others were 25 percent or more dependent (Akutan, Unalaska, and Toksook Bay). In terms of ex-vessel gross revenues to BSAI halibut vessels specifically, among the potentially substantially engaged or substantially dependent halibut communities for which revenues can be disclosed on an individual community basis, nine have dependencies of 90 percent or greater and one is more than 80 percent dependent.

In most cases, potentially substantially engaged or substantially dependent BSAI halibut communities located in the BSAI region itself are member communities of CDQ entities that receive substantial benefit from direct investment in commercial fishing operations. Many of these operations are directly involved in the harvesting and/or processing of BSAI groundfish and would be subject to decreases in BSAI halibut PSC limits during low abundance conditions under the proposed alternatives being considered. Ultimately, the level of direct impact to an individual CDQ entity and level of indirect impact to its member communities would depend on the individual levels of investment, range of investments with regard to fishery and geography, and overall financial management of other investments outside of commercial fishing.

While each CDQ entity manages their investments differently, one primary goal of the CDQ program is to encourage individual entities to use the returns from their engagement in commercial fishing to support regional economic growth, including the direct reinvestment in commercial fisheries, the support of community development activities, and the creation/maintenance of commercial fishing support infrastructure in member communities. Different CDQ groups have faced different circumstances and pursued different strategies regarding the establishment or sustainment of an in-region small boat

commercial halibut fishery. Some CDQ regions are coincident with Area 4E, which has a 100 percent CDQ reserve, essentially meaning that engagement of small, locally owned vessels in a commercial halibut fishery would necessarily be mediated by the CDQ group; in other CDQ regions with different levels of CDQ reserve, individuals, assuming they own or otherwise have the means to acquire or access IFQ quota, have the option of engaging in the fishery directly without exclusively going through the local CDQ entity.

For those CDQ groups whose experience in, or assessment of, supporting an in-region small boat commercial halibut fishery would indicate that the effort is not or would not be sustainable, especially under low abundance conditions, it is unknown whether the beneficial impacts that may accrue from implementation of one or more of the proposed alternatives would be sufficient to pass a tipping point whereby in-region halibut fisheries would be considered sustainable by the relevant CDQ group(s) even in low abundance conditions. For this reason, it is difficult to predict whether implementation of any one of the proposed alternatives would result in a different pattern of in-region CDQ community commercial small boat direct halibut fishery engagement than is seen at present.

***Potential Environmental Justice Concerns***

The potentially substantially engaged or substantially dependent BSAI halibut communities as determined by use of initial screening criteria that would potentially experience high and adverse impacts under the no-action alternative, and that would potentially benefit the most from the action alternative, include communities with high proportions of minority populations and high proportions of low-income populations. In terms of minority populations, of the 17 halibut dependent communities in the BSAI region, in 2010 minority residents (including Alaska Native residents) accounted for more than 90 percent of the population in 13 communities, between 80 and 90 percent of the population in two communities, and more than 65 percent of the population in the remaining two communities. In terms of Alaska Native populations specifically, of the 17 communities identified as halibut dependent communities in the BSAI region, 15 are members of CDQ groups. Of these 15 communities, Alaska Native residents make up over 90 percent of the total population in 11 of the communities, over 80 percent of the total population in two communities, and over 50 percent in one community.

In terms of low-income populations, of the 17 halibut dependent communities in the BSAI region, in 2017 three had between 40 and less than 50 percent of their residents living below the poverty threshold, five had between 30 and less than 40 percent of their residents living below the poverty threshold, one had between 20 and less than 30 percent of their residents living below the poverty threshold, and five had between 10 and less than 20 percent of their residents living below the poverty threshold (compared to 10.2 percent of Alaska's general population).

Given these demographics, if these communities were to experience disproportionate high and adverse impacts under the no-action alternative, environmental justice would be a concern. Conversely, if these communities were to experience beneficial impacts under the proposed action alternatives, environmental justice would not be an issue of concern.

### 1.2.1.2 Pacific Northwest Communities

The Seattle MSA is also substantially engaged in the BSAI/Area 4 halibut fishery as measured by ownership address of actively participating catcher vessels, among other indicators of engagement. Its engagement in the BSAI halibut fishery is not as dominant relative to that of Alaska communities, however, compared to its relative engagement in the BSAI groundfish fisheries likely to be most directly affected by the proposed alternatives. No community level adverse impacts related to the BSAI halibut fishery are anticipated to the Seattle MSA under either the no action alterative or the proposed action alternatives.

### 1.2.2 Potential Impacts to BSAI Communities Engaged in the Subsistence Halibut Fishery

Subsistence harvest of halibut would not be directly affected by the proposed action alternatives. Unlike the commercial halibut fishery, the subsistence halibut fishery would not benefit from potential reallocations between the BSAI groundfish and the BSAI directed halibut fisheries under the proposed alternatives. As noted in the DEIS to which this community analysis is appended, the IPHC accounts for incidental halibut removals in the groundfish fisheries, recreational and subsistence catches, and other sources of halibut mortality before setting commercial halibut catch limits each year. Each year, the IPHC estimates subsistence harvest by using the actual harvest level from the previous year as a base, and then adjusts the estimate by considering how accurate the previous year's harvest estimate was compared to actual harvest for that year. While subsistence removals are accounted for in setting the commercial halibut catch limits, subsistence halibut harvests are not constrained by this process. There are no caps on removals from Area 4 in the subsistence halibut fishery analogous to quotas established annually for the commercial halibut fishery, nor are there size limits on halibut harvested for subsistence use. In Areas 4A and 4B, encompassing the communities of Akutan, Unalaska, Nikolski, Atka, and Adak, under a Subsistence Halibut Registration Certificate permit there is a harvest limit of 20 halibut per person per day and no possession limit and a limit of 30 hooks per person onboard up to 90 hooks per vessel; in Areas 4C, 4D, and 4E, which encompass all of the other BSAI area communities, there are no daily or possession limits and there are no hook limits.

Subsistence halibut harvests (and harvesters) could indirectly benefit from the implementation of the proposed action alternatives if the proposed action ultimately implemented were to result in changes to the spatial distribution of halibut spawning mass, an overall improvement in availability of halibut for subsistence harvest, and/or an accompanying decrease in effort and expense in harvesting halibut for subsistence use. Beyond direct use of halibut as a subsistence resource, the proposed action alternatives could have impacts on other subsistence pursuits. These types of impacts fall into two main categories: impacts to other subsistence pursuits as a result of loss of income from the BSAI groundfish fishery under the action alternatives (or the BSAI halibut fishery under the no-action alternative) and impacts to other subsistence pursuits as a result of the loss of opportunity to use commercial fishing gear and vessels for subsistence pursuits. In general, however, while the indirect impact of the proposed action alternatives on subsistence is difficult to assess for multiple reasons, joint production impacts in particular are likely to be concentrated among small halibut catcher vessel owners under the no-action alternative.

### 1.2.3 Potential Impacts to BSAI Communities Engaged in the Sport Halibut Fishery

Similar to the subsistence harvest of halibut, the sport harvest of halibut would not be directly affected by the proposed action alternatives as, unlike the commercial halibut fishery, the sport halibut fishery would not benefit from potential reallocations between the BSAI groundfish fishery and the BSAI commercial halibut fisheries if BSAI halibut PSC limits were reduced under low abundance conditions. Due to the relatively small volume of recreational use in Area 4 and the management under a daily bag limit rather than an area/sector allocation, IPHC accounts for recreational removals using a projection. There are no caps on removals from Area 4 in the sport halibut fishery analogous to quotas established annually for the commercial halibut fishery, but sport effort is constrained in Area 4 by a sport fishing season that extends from February 1 to December 31 and a bag limit of two halibut of any size per person per day unless otherwise specified. Sport halibut harvests (and the guided and unguided sport halibut fisheries) could indirectly benefit from the implementation of the proposed action alternatives if reducing BSAI halibut PSC limits under low abundance conditions were to ultimately result in an overall improvement in availability of halibut for sport harvest, an accompanying decrease in effort and expense in harvesting halibut for sport use, and/or an increase in interest in halibut sport fishing in the region prompted by an increasing abundance of larger halibut.

### 1.2.4 Potential Cumulative Small/Rural Community and Cultural Context Issues

This SIA largely focused on community impacts associated with the implementation of proposed BSAI halibut PSC limit revisions through the use of quantitative fishery information and through characterizations of a number of Alaskan regions and communities that describe the magnitude of engagement and dependency on those fisheries. This approach provides an analysis of anticipated socioeconomic impacts that may accompany implementation of the proposed action alternatives. It should be noted, however, that fishing regulatory actions can result in a wide range of sociocultural impacts in rural fishing communities. For many residents of these communities, commercial fishing is not seen as a stand-alone socioeconomic activity, but an integral part of self-identity. This relationship is compounded for those residents who come from families with multi-generational experience in commercial and/or subsistence fishing, particularly for those Alaska Native residents for whom fishing is part of a larger, integrated traditional subsistence and economic sustenance practice rooted in thousands of years of history.

The cultural importance of halibut (as a species) and halibut fishing (as a traditional activity) is documented in the anthropological literature for Alaska Native tribal groups throughout Alaska. In addition to being a primary subsistence resource for many coastal groups, halibut feature prominently in legends and parables. It is not uncommon to see halibut iconography in carvings, paintings, and textile handicrafts throughout the region, further suggesting its traditional cultural importance.

While sustained participation of fishing communities in the BSAI groundfish or BSAI halibut fisheries would not appear to be directly at risk from implementation of the proposed action or alternatives, the available literature and recent NPFMC analyses underlines the fact that the proposed action is not taking place in isolation. Existing trends suggest that sustained participation in a range of commercial fisheries by residents of small communities in the region has become more challenging in recent years, with less inherent flexibility to adjust to both short- and long-term fluctuations in resource availability (as well as to changing markets for seafood products).

This flexibility is widely perceived in the communities as a key element in an overall adaptive strategy practiced in subsistence and economic contexts in the region for generations. This strategy involves piecing together individual livings (and often local economies) with an employment and income plurality approach. This plurality approach is particularly important given that the availability of non-fishing alternatives for income and employment are limited and, like the natural resources (and market factors) that underpin commercial fishing opportunities, tend to be subject to both short- and long-term fluctuations. This ongoing fluctuation in non-fishing opportunities further reinforces the importance of flexibility in the pursuit of a range of commercial fishing opportunities to enable individuals and communities the ability to successfully combine fishing and non-fishing as well as commercial and subsistence pursuits considered critical to long-term socioeconomic and sociocultural survival if not stability. To the extent that the proposed alternatives would serve to provide for more opportunities for the success of small-scale commercial halibut fisheries during periods of low resource abundance, overall sustained participation in a range of local fisheries by residents of the smaller communities in particular would be more secure.

# 2 Overview

This document, a social impact assessment (SIA), is organized as an appendix to a preliminary draft Environmental Impact Statement (DEIS) that analyzes proposed management measures to index Pacific halibut prohibited species catch (PSC) limits in the Bering Sea and Aleutian Islands (BSAI) groundfish fisheries to halibut abundance. PSC limit modifications are considered for various sectors, including the BSAI trawl limited access (TLAS) sector, the Amendment 80 sector, longline[1] catcher vessels, longline catcher/processors, and the Community Development Quota (CDQ) sector (i.e., a reduction to the CDQ's allocated prohibited species quota reserve).

As described in Chapter 1 of the DEIS, the objective of modifying PSC limits is to index PSC limits to halibut abundance which may achieve different goals of providing flexibility to the groundfish fisheries in times of high halibut abundance, protecting spawning biomass of halibut especially at low levels, and stabilizing in inter-annual variability in PSC limits, all of which may provide additional harvest opportunities in the commercial halibut fishery. Pacific halibut is also utilized in Alaska as a target species in subsistence, personal use, and recreational (sport) fisheries. Halibut is of substantial social, cultural, and economic importance to fishery participants and fishing communities throughout the geographical range of the resource.

Currently, halibut PSC limits are a fixed amount of halibut mortality in metric tons. When halibut abundance declines, halibut PSC becomes a larger proportion of total halibut removals and can result in lower catch limits for directed halibut fisheries. Both the North Pacific Fishery Management Council (NPFMC or Council) and the International Pacific Halibut Commission (IPHC) have expressed concern about impacts on directed halibut fisheries under the status quo and identified abundance-based halibut PSC limits as a potential management approach to address these concerns.

The Council's purpose and need statement for this action is:

> *The current fixed yield-based halibut PSC caps are inconsistent with management of the directed halibut fisheries and Council management of groundfish fisheries, which are managed based on abundance. When halibut abundance declines, PSC becomes a larger proportion of total halibut removals and thereby further reduces the proportion and amount of halibut available for harvest in directed halibut fisheries. Conversely, if halibut abundance increases, halibut PSC limits could be unnecessarily constraining. The Council is considering linking PSC limits to halibut abundance to provide a responsive management approach at varying levels of halibut abundance. The Council is considering abundance-based PSC limits to control total halibut mortality, particularly at low levels of abundance. Abundance based PSC limits also could provide an opportunity for the directed halibut fishery and protect the halibut spawning stock biomass. The Council recognizes that abundance-based halibut PSC limits may increase and decrease with changes in halibut abundance.*

As described in Chapter 2 of the DEIS, there are three overarching alternatives under consideration by the Council. These have been developed through multiple discussion papers and Council considerations, and consultation with stakeholders. These alternatives range from status quo with fixed halibut PSC limits by

[1] For the sake of clarity, the more limited term "hook-and-line" rather than the broader term "longline" is routinely used in this SIA to describe those specific longline catcher vessel and longline catcher/processor sectors most likely to be potentially directly affected by one or more of the proposed alternatives (as opposed to, for example, longline pot sector catcher vessels).

sector to a range of gear-specific PSC limits indexed to BSAI halibut abundance. In simplified[2] form, these are:

- **Alternative 1**: Status Quo.
- **Alternative 2**: A single index is used to set trawl and/or non-trawl halibut PSC limit. There are two options for selection of an index.
    - **Option 1:** National Marine Fisheries Service (NMFS) Eastern Bering Sea (EBS) bottom trawl survey index.
    - **Option 2:** IPHC Area 4 setline survey index.
- **Alternative 3:** Both primary and secondary indices are used to set trawl and/or non-trawl PSC limit. The secondary index modifies the PSC limit after the primary index is applied when the secondary index is in a "high state" or a "low state." There are two options for specifying which index is the primary index and which is the secondary index under this alternative.
    - **Option 1**: Primary index is EBS trawl survey, secondary index is Area 4 setline survey.
    - **Option 2**: Primary index is Area 4 setline survey, secondary index is EBS trawl survey.

This SIA is organized into seven primary sections. Following the Executive Summary (Section 1) and this Overview, these are as follows:

- Section 3 provides the regulatory context of the SIA.
- Section 4 provides introduction and methodology discussions.
- Section 5 provides quantitative indicators of community fishery engagement and dependency for the fisheries most directly relevant to the analysis.
- Section 6 provides information on the regional and community context of the relevant fisheries.
- Section 7 provides an analysis of regional and community level social impacts by alternative.

Following these sections, lists of references cited and persons consulted are provided (Sections 8 and 9, respectively), along with four attachments referenced in the body of the document (Sections 10.1 through 10.4).

The information contained in this SIA, with a focus on the analysis and conclusions presented in Sections 5, 6, and 7, is summarized in the DEIS.[3]

[2]Under both Alternatives 2 and 3 there are five Elements (with Options) that must be specified under any alternative formulation and two additional that are optional. Additional detail on all of the alternatives considered is provided in Chapter 2 of the DEIS.

[3] See Section 6.5 of the DEIS to which this SIA is appended.

# 3 Regulatory Context

This community-level social impact assessment of the proposed action is guided largely by National Standard 8 – Communities under the provisions of the Magnuson-Stevens Act; National Environmental Policy Act (NEPA); and Executive Order (EO) 12898, Federal Action to Address Environmental Justice in Minority Population and Low-Income Populations.

## 3.1 Magnuson-Stevens Act National Standard 8

National Standard 8 (50 CFR [Code of Federal Regulations] 600.345) specifies that conservation and measures shall, consistent with the conservation requirements of the Magnuson-Stevens Act, take into account the importance of fishery resources to fishing communities by utilizing economic and social data that are based on the best scientific information available in order to (1) provide for the sustained participation of such communities, and (2) to the extent practicable, minimize adverse economic impacts to such communities.

Per National Standard 8, the term "fishing community" means a community that is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fish processors that are based in such communities. A fishing community is a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or directly related fisheries-dependent services and industries (for example, boatyards, ice suppliers, tackle shops).

Also, per National Standard 8, the term "sustained participation" means continued access to the fishery within the constraints of the condition of the resource. Per the guidelines for National Standard 8:

> *FMPs [Fishery Management Plans] must examine the social and economic importance of fisheries to communities potentially affected by management measures. For example, severe reductions of harvests for conservation purposes may decrease employment opportunities for fishermen and processing plant workers, thereby adversely affecting their families and communities. Similarly, a management measure that results in the allocation of fishery resources among competing sectors of a fishery may benefit some communities at the expense of others* (50 CFR 600.345).

## 3.2 Social and Economic Analysis Under NEPA

Under NEPA, "economic" and "social" effects are specific environmental consequences to be examined (40 CFR 1502.16 and 1508.8). Economic effects are examined primarily in the Environmental Impact Statement (EIS), the main document to which this community analysis document is appended, while social effects (and community-level economic effects) are examined primarily in this SIA.

## 3.3 EO 12898 Environmental Justice

EO 12898 (59 Federal Register [FR] 7629; February 16, 1994) directs Federal agencies "to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

The EO directs the development of agency strategies to include identification of differential patterns of consumption of natural resources among minority populations and low-income populations; Council on Environmental Quality (CEQ) environmental justice guidance under NEPA also specifically calls for consideration of potential disproportionately high and adverse impacts to Indian tribes[4] beyond a more general consideration of potential disproportionately high and adverse impacts to minority populations (Council on Environmental Quality 1997).[5]

[4] The term Indian tribe is retained due to its use in both the EO and CEQ guidance; the provisions of the EO and CEQ guidance are understood to apply to Alaska Native tribes in the region potentially affected by the proposed action alternatives.

[5] Per CEQ guidance on environmental justice, under NEPA, the identification of a disproportionately high and adverse human health or environmental effect (including interrelated social, cultural, and economic effects) on a low-income population, minority population, or Indian tribe does not preclude a proposed agency action from going forward, nor does it necessarily compel a conclusion that a proposed action is environmentally unsatisfactory. Rather, the identification of such an effect should heighten agency attention to alternatives, mitigation strategies, monitoring needs, and preferences expressed by the affected community or population. Further, per CEQ guidance, agencies should recognize the interrelated cultural, social, occupational, historical, or economic factors that may amplify the natural and physical environmental effects of the proposed agency action. The factors should include the physical sensitivity of the community or population to particular impacts; the effect of any disruption on the community structure associated with the proposed action; and the nature and degree of impact on the physical and social structure of the community.

# 4 Introduction and Methodology

## 4.1 General Approach

For the purposes of this community assessment, a two-pronged approach to analyzing the community or regional components of changes associated with the implementation of BSAI halibut abundance-based management (ABM) of PSC limits was utilized. First, tables based on existing quantitative fishery information were developed to identify patterns of participation in the relevant sectors of the groundfish and/or halibut fisheries, i.e., the sectors most likely to be directly affected by one or more of the proposed action alternatives. This is consistent with the portion of the National Standard 8 guidelines that state:

> *To address the sustained participation of fishing communities that will be affected by management measures, the analysis should first identify affected fishing communities and then assess their differing levels of dependence on and engagement in the fishery being regulated* (50 CFR 600.345[6]).

The second approach to producing this community analysis involved selecting a subset of Alaska communities engaged in the relevant BSAI groundfish and/or halibut fisheries for characterization of the community context of the relevant fisheries to describe the range, direction, and order of magnitude of social- and community-level engagement and dependency on those fisheries. The approach of using a subset of communities rather than attempting characterization of all the communities in the region(s) involved was chosen due to the practicalities of time and resource constraints. This is consistent with the portion of the National Standard 8 guidelines that state:

> *The best available data on the history, extent, and type of participation in these fishing communities in the fishery should be incorporated into the social and economic information presented in the FMP. The analysis does not have to contain an exhaustive listing of all communities that might fit the definition; a judgment can be made as to which are primarily affected* (50 CFR 600.345).

This characterization has been largely undertaken with existing information (as supplemented with phone and email contact with a limited number of individuals). The analysis was also informed by data gathered during limited fieldwork in Unalaska/Dutch Harbor[7] and Akutan that was undertaken in conjunction with updates of the Council's baseline fishing community profiles of those two communities.

[6]The National Standard 8 guidelines referenced in this SIA, current as of July 16, 2019, are from the Electronic Code of Federal Regulations (CFR) Title 50, Chapter VI, Part 600, Subpart D, Section 600.345 (cited as 50 CFR 600.345) are available at https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=6b0acea089174af8594db02314f26914&mc=true&r=SECTION&n=se50.12.600_1345 accessed 7/18/19.

[7] In most Council SIAs, the term "Unalaska" is typically used to refer to the City of Unalaska including its port of Dutch Harbor, which is fully encompassed within the municipal boundaries of the City of Unalaska. Within some fishery data sources, however, Unalaska and Dutch Harbor fishery statistics are reported separately, as there are separate Unalaska and Dutch Harbor mailing addresses and zip codes. In this SIA, those statistics are combined for reporting as they represent two components of the same community and the term "Unalaska/Dutch Harbor" is consistently used for the community to clearly signify that those separate data values have been combined. It is understood that use of the name "Unalaska" for the community is more technically accurate and otherwise preferred, especially by long-term residents of the community, and no disrespect or discounting of those preferences is implied by the use of the term Unalaska/Dutch Harbor in this document.

## 4.2 Quantitative Measures of Fishing Community Engagement and Dependency

Summary tables, typically including time series data indicative of fishery engagement and/or fishery dependence[8] from 2010 through 2018, are presented in Section 4.0, along with accompanying narrative. This analysis focuses on the distribution of relevant fishery sectors (primarily catcher vessels and associated ex-vessel gross revenues, catcher/processors and associated first wholesale gross revenues, and/or shoreside processors and associated first wholesale gross revenues) across regions and communities and follows annual and average participation indicators.

Within this quantitative characterization of fishery participation, several simplifying assumptions were made. For the purposes of this analysis, assignment of catcher vessels (and catcher/processors) to a region or community has been made based upon ownership address information as listed in the Alaska Commercial Fisheries Entry Commission (CFEC) vessel registration files. Thus, some caution in the interpretation of this information is warranted. It is not unusual for vessels to have complex ownership structures involving more than one entity in more than one region. Further, the community of ownership address does not directly indicate where a vessel spends most of its time, purchases services, or hires its crew as, for example, some of the vessels with ownership addresses in the Pacific Northwest spend a great deal of time in Alaska ports and hire at least some crew members from these ports. The region or community of ownership address, however, does provide a rough indicator of the direction or nature of ownership ties (and a proxy for associated economic activity, as no existing datasets provide information on where BSAI catcher vessel earnings are spent), especially when patterns are viewed at the sector or vessel class level. Ownership location has further been chosen for this analysis as the link of vessels to communities rather than other indicators, such as vessel homeport information, based on previous NPFMC FMP social impact assessment experience (e.g., AECOM 2010) that has indicated the problematic nature of existing homeport data. Similarly, License Limitation Program (LLP) licenses have been assigned to communities based on license ownership address as it appears in the Alaska Regional Office Restricted Access Management (RAM) Program LLP license database used for this analysis.[9]

For shoreside processors, regional or community designation was based on the operating location of the plant (rather than ownership address) to provide a relative indicator of the local volume of fishery-related economic activity, which can also serve as a rough proxy for the relative level of associated employment and local government revenues. This is also consistent with established NPFMC FMP social impact assessment practice.

There are, however, considerable limitations on the data that can be utilized for these purposes, based on confidentiality restrictions. A prime example of this is where a community is the site of one or two shoreside processors active in a community in a given year. No information can be disclosed about the volume and/or value of landings in those communities. This, obviously, severely limits quantitative discussions of the potential impacts of the management alternatives being analyzed. In short, the frame of reference or unit of analysis for the discussion in this section is the individual sector, and the analysis

[8] Dependence on a fishery can be measured in multiple ways and is a complex concept with economic, social, and other dimensions. In the case of the referenced summary tables, the economic dimension of dependence is characterized simply as the proportional contribution of ex-vessel gross revenues or first wholesale gross revenues resulting from engagement in the given fishery relative to the overall ex-vessel gross revenues or first wholesale gross revenues generated by the catcher vessels, catcher/processors, or shore-based processors from their engagement in all species, gear, and area fisheries.

[9] A later section of the document (Section 6.7) provides a set of "cross-walk" tables showing the degree of correspondence of community of vessel ownership address to community of vessel homeport as well as community of vessel ownership address to community of LLP license ownership address for the most recent year for which data are available. Also presented in that section is the correspondence of community of vessel ownership address to community of crew residence to the limited extent existing data allow.

looks at how engagement in the fishery most likely to be directly affected by the proposed management actions has been differentially distributed across communities and regions within this framework. The practicalities of data limitations, however, serve to restrict this discussion.

## 4.3 The Community Context of Fishery Engagement and Dependency

The communities engaged in the relevant fisheries are numerous and far-flung. Communities (and types of potential impacts) vary based upon the type of engagement of the individual community in the fishery, whether it is through being a community of ownership address of a portion of the catcher vessel fleet; being the location of shoreside processing; being the base of catcher/processor or floating processor ownership or activity; or being the location of fishery support sector businesses. In short, the second approach employed in this analysis uses the community or region as the frame of reference or unit of analysis (as opposed to the fishery sector as in the first approach). This approach examines, within the community or region, the local nature of engagement or dependence on the fishery in terms of the various sectors present in the community and the relationship of those sectors (in terms of size and composition, among other factors) to the rest of the local social and economic context. This approach then qualitatively provides a context for potential community impacts that may occur because of fishery management-associated changes to the locally present sectors in combination with other community-specific attributes and socioeconomic characteristics.

Simplifying assumptions also needed to be made as to which communities to select for characterization, given the large number of communities participating in the fisheries (especially the BSAI halibut[10] fishery), the desire to focus on the communities most clearly substantially engaged in and/or substantially dependent on the fishery (and therefore most likely to be directly affected by proposed management actions), a recognition that communities with multi-sector activity may be more or less vulnerable to potential adverse impacts related to the proposed fishery management changes based on the particular sectors present specific communities[11] and, most importantly based on the purpose and need statement,

[10] In this document, "BSAI halibut fishery" is used as shorthand for directed (commercial) halibut fisheries in IPHC Area 4 (which includes IPHC Areas 4A, 4B, 4C, 4D, and 4E). The boundaries of IPHC Area 4 are largely consistent with the boundaries of the federal BSAI North Pacific management area, except IPHC Area 4A includes the far western portion of the federal Gulf of Alaska North Pacific management area south of the Aleutian Chain in the general vicinity of Akutan and Unalaska Islands (the sites of their namesake communities, which are labeled in Figure 1), as well as Umnak Island (the large unlabeled island in Figure 1 shown to the west of Unalaska Island). For more detail, please see the discussion of vessels whose Area 4 directed halibut fishing effort was exclusive to this portion of Area 4A in Section XX of the EIS to which this SIA is appended. For the purposes of this SIA, however, in summary, over the period 2010-2018, the universe of communities of ownership of these vessels is relatively small, especially for Alaska communities. Unalaska/Dutch Harbor was the only community in the BSAI region with any vessels with local ownership addresses active in the directed Area 4 halibut fishery that was exclusive to the portion of Area 4A south of the Chain (one vessel each year 2011-2013 and 2015, two vessels 2010 and 2014, and none in any year 2016-2018). Two GOA communities had one such vessel each in one year (Sitka 2010 and Wasilla 2013); another (Kodiak) had such one vessel in 2010 and 2017 and two in 2016; and a fourth community (Homer) had one such vessel in five years (2010, 2012, 2014-2015, and 2017), two in one year (2013) and four in one year (2016). No Alaska ownership address vessels active in the Area 4 directed halibut fishery confined their efforts to the GOA portion Area 4A in 2018. The portion of Area 4B south of the Aleutian Chain is outside of the geographic boundaries of Bering Sea, similar to the situation with Area 4A, however the area south of the Chain in Area 4B is in the Aleutian Islands portion of the BSAI North Pacific management area, not in the North Pacific's Gulf of Alaska management area.

[11] For example, if multiple fishery sectors present in a community were all adversely affected by a proposed management action, then those combined impacts, at the community level, may be greater than the sum of individual sector impacts as, for example, direct fishery support sector businesses or municipal services are, in turn, adversely affected. Alternatively, if some locally present fishery sectors were adversely affected and some locally present fishery sectors were beneficially affected, then those combined impacts, when aggregated at the community level, may in

those communities most likely to directly benefit from intended potential beneficial impacts of the action alternatives.

### 4.3.1 Alaska BSAI Groundfish Communities

The initial screening criteria for selection of Alaska communities as potentially substantially engaged in or substantially dependent on the relevant BSAI groundfish fisheries for characterization in Section 3.0 included those Alaska communities that had at least a minimal, ongoing level of engagement in the relevant fisheries, as measured by one or more of the following indicators in the primary dataset used for analysis (2010-2018):

- An annual average of one or more BSAI groundfish TLAS trawl catcher vessel(s) with a local ownership address that made at least one BSAI groundfish delivery over the years 2010-2018 inclusive. [12]
- An annual average of one or more hook-and-line catcher vessel(s) with a local ownership address that made at least one BSAI groundfish delivery over the years 2010-2018 inclusive, where hook-and-line groundfish catcher vessels are defined as those participating in groundfish fisheries subject to BSAI halibut PSC limits.[13]
- An annual average of one or more Amendment 80 sector[14] groundfish trawl catcher/processor(s) with a local ownership address that participated in the BSAI groundfish fisheries over the years 2010-2018 inclusive.
- An annual average of one or more groundfish hook-and-line catcher/processor(s) with a local ownership address that participated in the BSAI groundfish fisheries over the years 2010-2018 inclusive, where hook-and-line groundfish catcher/processors are defined as those participating in groundfish fisheries subject to BSAI halibut PSC limits.[15]
- An annual average of greater than 0.5 locally operating shore-based processor(s) that processed BSAI groundfish from catcher vessels in the TLAS and/or hook-and-line sectors and/or deliveries CDQ groundfish harvested by catcher vessels from any sector (not just the TLAS and hook-and-line sectors) over the years 2010-2018 inclusive.

Using these initial screening criteria, 12 communities were provisionally selected for characterization as the Alaska communities potentially substantially engaged in, and/or potentially substantially dependent on, the BSAI groundfish fisheries most likely to be directly affected by one or more of the various

whole or in part cancel one another out, with the beneficial impacts to some sector or sectors effectively minimizing or offsetting the adverse impacts to another sector or sectors.

[12] As a simplifying assumption, trawl vessels that engaged in pelagic trawl and non-pelagic trawl in both shallow-water and deep-water complexes were combined due to the limited number of vessels in any complex, pelagic or non-pelagic, in any community, for any year, in order to present more complete data than would otherwise be possible due to confidentiality restrictions.

[13] This serves to exclude data from halibut and sablefish fisheries in federal waters as well as those from guideline harvest-level fisheries that are under the management authority of the State of Alaska and not subject to the federal PSC limits. For practical purposes, this limits the BSAI groundfish hook-and-line catcher vessel fishery considered in this analysis to the directed Pacific cod longline fishery in federal waters.

[14] Amendment 80, implemented in 2008, allocates BSAI yellowfin sole, flathead sole, rock sole, Atka mackerel, and Aleutian Islands Pacific ocean perch to the head and gut trawl catcher/processor sector, and allows qualified vessels to form cooperatives.

[15] As was the case with hook-and line catcher vessels, this serves to exclude data from halibut and sablefish fisheries in federal waters as well as those from guideline harvest-level fisheries that are under the management authority of the State of Alaska and not subject to the federal PSC limits. For practical purposes, this limits the BSAI groundfish hook-and-line catcher/processor fishery considered in this analysis to the Pacific cod fishery in federal waters.

proposed management alternatives, which are the BSAI TLAS and hook-and-line open access groundfish fisheries and the BSAI CDQ groundfish fisheries.[16] These communities are shown in Table 1.

**Table 1. Communities Potentially Substantially Engaged in Relevant BSAI Groundfish Fishery Sectors, 2010-2018, as Selected by Initial Screening Criteria**

| | Community of Vessel Ownership Address | | | | Locally Operating SBPR | Geographic/ FMP Region Location |
|---|---|---|---|---|---|---|
| Alaska Community | TLAS CV | H&L CV | A80 CP | H&L CP | | |
| Adak | | | | | X | BSAI |
| Akutan | | | | | X | BSAI |
| Atka | | | | | X | BSAI |
| Nome | | | | | X | BSAI |
| Unalaska/Dutch Harbor | | X | | | X | BSAI |
| Anchorage | | | | X | X | GOA |
| Homer | | X | | | | GOA |
| King Cove | | | | | X | GOA |
| Kodiak | X | | | | X | GOA |
| Petersburg | | | | X | | GOA |
| Sand Point | | | | | X | GOA |
| Sitka | | X | | | | GOA |

Table specific abbreviations: CV = catcher vessel; CP = catcher/processor; H&L = hook-and-line; A80 = Amendment 80; SBPR = shore-based processor.

Of these 12 communities, five (Adak, Akutan, Atka, Nome, and Unalaska/Dutch Harbor) were separately selected for characterization as communities potentially substantially engaged in or substantially dependent upon the BSAI/Area 4 halibut fishery, based on initial screening criteria thresholds of participation in the fishery.[17] As such, they could be affected in a number of different ways by any of the alternatives.[18]

The remaining seven communities, all located outside of the BSAI region, vary in the nature and level of their specific engagement in the BSAI groundfish fisheries:

- Anchorage appears in the dataset as having an annual average of 2.4 BSAI groundfish hook-and-line catcher/processors with local ownership addresses for the period 2010-2018, as well as being the location of an annual average of 1.6 shore-based processors that accepted landings of BSAI

[16] These specifically exclude the American Fisheries Act (AFA) and state-managed groundfish fisheries.

[17] The initial screening criteria for communities potentially substantially engaged in and/or substantially dependent on the BSAI halibut fishery included all communities with a 2010-2018 annual average harvest engagement of 2.0 or more catcher vessels with local ownership addresses active in the BSAI halibut fishery and/or communities with an annual average BSAI halibut processing engagement of 0.5 or more locally operating shore-based processors that accepted BSAI halibut deliveries. A total of 21 communities in the BSAI region itself met one or both of these criteria.

[18] Six of the 12 communities were characterized in a separate principal components factor analysis (PCFA) exercise as having been highly engaged in the BSAI/Area 4 halibut fishery through harvesting engagement (Homer), processing engagement (Adak, Akutan, and Anchorage), and/or both (Unalaska/Dutch Harbor and Kodiak) at least one year 2010-2018 (see Section 4.3.2). Four others of the 12 communities were characterized has having either medium or medium-high engagement in BSAI/Area 4 halibut harvesting and/or processing at least one year 2010-2018 as well (Atka, medium harvesting and medium high processing; Nome, medium high harvesting and medium processing; King Cove, medium processing; and Sitka, medium high processing) (see Table 4).

TLAS and/or hook-and-line caught groundfish each year during this same period. All first wholesale gross revenue data associated with Anchorage's engagement in these sectors are confidential. Further, a general knowledge of the industry would suggest that at least some of the activity attributed to Anchorage is the result of inaccurate assignment of operating locations of processing plants (where an office address is given as the location of operation rather than actual community of operation) and, in the case of catcher/processors, at least some of the ownership attributed to Anchorage is likely due to some CDQ entities basing their offices and fishery business support operations in Anchorage rather than in the CDQ regions themselves. Even without considering these potential overrepresentations of the direct role of Anchorage in the relevant fishery sectors, given the size and economic diversity of Anchorage, which would effectively further limit the community's dependence on an already limited level fishery engagement, Anchorage engagement or dependence on the sector is relatively limited. As a result, Anchorage was dropped from further consideration for inclusion in the regional/community characterizations.

- Homer appears in the dataset as having an annual average of 5.3 BSAI groundfish hook-and-line catcher vessels with local ownership addresses for the period 2010-2018. That was more than any other community in any state, and more than twice as many as any other community except for the metropolitan Seattle area of Washington (as defined by the Seattle-Tacoma-Bellevue, Washington Metropolitan Statistical Area [MSA] and referred to as the "Seattle MSA" in this document).[19] These vessels accounted for roughly half of all the ex-vessel gross revenues for BSAI groundfish hook-and-line vessels with Alaska ownership addresses during this time period. BSAI groundfish hook-and-line ex-vessel gross revenues accounted for approximately 21 percent of all ex-vessel gross revenues (for all area, gear, and species fisheries) for these Homer ownership address vessels. However, they account for less than one percent of the total ex-vessel gross revenues for all commercial fishing vessels with Homer ownership addresses participating in all area, gear, and species fisheries (i.e., the Homer "community fleet"). Given the minor contribution of this relatively limited sector engagement to Homer's larger fishing economy (and to the community's relatively diversified economy overall), Homer was dropped from further consideration for inclusion in the regional/community characterizations.
- King Cove appears in the 2010-2018 dataset as being the location of one shore-based processor that accepted landings of BSAI TLAS and/or hook-and-line caught groundfish each year during this period. All revenue data associated with King Cove's engagement in this sector are confidential. Given a general knowledge of King Cove shore-based processing operations however, it is assumed that the King Cove shore-based processor has little dependency on BSAI TLAS or hook-and-line groundfish landings relative to landings of all area, gear, and species fisheries combined. Given the concentrated nature of community engagement in BSAI groundfish fishery through the shore-based processing sector alone and the assumed limited dependency of that sector on the BSAI groundfish TLAS and hook-and-line fisheries, King Cove was dropped from further consideration for inclusion in the regional/community characterizations.
- Kodiak appears in the 2010-2018 dataset as having annual average of 4.3 BSAI groundfish TLAS catcher vessels with local ownership addresses over this period. While the data for two years are confidential (2010 and 2014), BSAI groundfish ex-vessel gross revenues for these vessels accounted for an annual average of about seven percent of total ex-vessel gross revenues for these vessels for the period; these ex-vessel gross revenues account for a far lower percentage of the average annual total ex-vessel gross revenues for all catcher vessels (for all areas, gears, and fisheries) with Kodiak ownership addresses over this same time period, such that the community

[19] The Seattle-Tacoma-Bellevue Metropolitan Statistical Area is a U.S. Census Bureau defined area used to tabulate the metropolitan area in and around Seattle, Washington. It includes King, Snohomish, and Pierce counties.

catcher vessel fleet as a whole has little dependence on the BSAI groundfish trawl fishery. (While five Kodiak ownership address hook-and-line catcher vessels also participated in the BSAI groundfish fishery in 2010, and one did so in 2012 and 2013, none participated in the five most recent years covered by the dataset.) An annual average of 0.7 Kodiak shore-based processors accepted relevant BSAI groundfish deliveries over the period 2010-2018 (three in 2016 and one each in 2012, 2014, and 2017, with a total of three unique processors participating over this period and none participating in five of the nine years covered by the data). Given the limited dependency of the overall Kodiak catcher vessel fleet on the relevant BSAI groundfish fisheries, and the relative size and economic diversity of the community of Kodiak in general and its commercial fisheries in particular, Kodiak was dropped from further consideration for inclusion in the regional/community characterizations.

- Petersburg appears in the 2010-2018 dataset as having an annual average of 4.5 hook-and-line catcher/processors with local ownership addresses engaged in BSAI groundfish fishery over this period. However, while four or five of these vessels were active each year 2010-2015, and a total of six unique vessels participated in the fishery during those years, no vessels with Petersburg ownership addresses participated in the fishery in the three most recent years covered by the data (2016-2018). (Petersburg also appears in the data as having one BSAI groundfish TLAS catcher vessel with a community ownership address active in the fishery in 2010, but there is no similar activity in the most recent eight years covered by the dataset.) Given the lack of participation in the fishery in the three most recent years for which data are available, Petersburg was dropped from further consideration for inclusion in the regional/community characterizations.
- Sand Point appears in the 2010-2018 dataset as being the location of one BSAI groundfish shore-based processor actively participating in the relevant BSAI groundfish fisheries in five of the nine years covered by the data (2010-2011, 2013, 2015, and 2018). All revenue data associated with Sand Point's engagement in this sector are confidential. Given a general knowledge of Sand Point shore-based processing operations and BSAI groundfish catcher vessel delivery patterns however, it is assumed that the Sand Point shore-based processor has little dependency on BSAI TLAS groundfish landings and/or BSAI hook-and-line Pacific cod landings or CDQ landings relative to landings of all area, gear, and species fisheries combined. Given lack of recent participation of catcher vessels with Sand Point ownership addresses in the BSAI groundfish TLAS and/or hook-and-line sectors, the intermittent nature of participation of the shore-based processing sector in accepting landings from either sector in recent years, and the assumed limited dependency of the local shore-based processor on those landings in particular, Sand Point was dropped from further consideration for inclusion in the regional/community characterizations.
- Sitka appears in the 2010-2018 dataset as having annual average of approximately 1.2 BSAI groundfish hook-and-line catcher vessels with local ownership addresses over this period, which included a total of seven unique vessels. While there were three and five such vessels active in 2010 and 2011, respectively, from 2012 to 2014 a single vessel participated each year, and none did so in the most recent four years covered by the data (2015-2018). About two percent of total ex-vessel gross revenues for the participating Sitka ownership address vessels were attributable to this fishery. For the Sitka commercial fleet as a whole, ex-vessel gross revenue from the BSAI groundfish hook-and-line fishery accounted for about 0.1 percent of combined ex-vessel gross revenues. Given the limited dependency of the overall Sitka catcher vessel fleet on the relevant BSAI groundfish fisheries, and the relative size and economic diversity of the community of Sitka in general and its commercial fisheries in particular, Sitka was dropped from further consideration for inclusion in the regional/community characterizations.

Although they do not appear in the Section 6 community characterizations, these seven communities are each briefly noted in the Section 7 analysis.

The nature and magnitude of direct engagement of all other Alaska communities in the BSAI groundfish fishery in the sectors potentially affected by the proposed alternatives are presented in the tables and associated text in Section 5 and summarized in Table 83 in Section 7.1.1.3. These "all other Alaska" communities (i.e., those communities not listed in Table 1) did not exhibit continuous, ongoing engagement in the fishery and are not otherwise further discussed in Section 6 or Section 7.

### 4.3.2 Alaska BSAI Halibut Communities

The community analysis of potential impacts of the proposed action on Alaska communities engaged in and dependent upon the BSAI halibut fishery focuses on communities in the BSAI region (and, to a more limited extent, communities outside of the region that are nonetheless engaged in the BSAI/Area 4 halibut fishery) for two reasons. First, a portion of the Council's purpose and need statement for the proposed action notes that "*when halibut abundance declines, PSC becomes a larger proportion of total halibut removals and thereby further reduces the proportion and amount of halibut available for harvest in directed halibut fisheries*" As this action is focused on the BSAI, it assumed that whatever adverse impacts of the status quo that were to occur in periods of halibut abundance decline would be first and most directly experienced in the Area 4 directed halibut fisheries. Second, the purpose and need statement also reads in part: "*The Council is considering abundance-based PSC limits to control total halibut mortality, particularly at low levels of abundance. Abundance based PSC limits also could provide an opportunity for the directed halibut fishery and protect the halibut spawning stock biomass*." It is assumed that protection of the spawning biomass in the BSAI/Area 4 would potentially benefit halibut that migrate and recruit into Gulf of Alaska, British Columbia, and the Pacific Coast halibut fisheries, meaning there would also be benefits realized to substantially engaged or substantially dependent halibut communities in these areas. However, past analyses[20] have suggested that the effects of reducing PSC mortality of U26 fish in the BSAI (which logically could potentially occur under low abundance conditions in at least some circumstances in some of the current alternative and option combinations) would be much lower on fisheries outside of the BSAI region than on Area 4 halibut fisheries and, further, Gulf of Alaska and coast-wide effects of reduced mortality of U26 fish would also be realized over a long range of years, not beginning until four to seven years after the initiation of PSC reduction in the BSAI. This would tend to dilute the benefits to individual communities that are dependent on halibut harvested outside of the BSAI region. Consequently, no attempt has been made in this document to analyze community-level impacts of any potential reductions in U26 halibut PSC mortality on halibut fisheries outside of the BSAI.

To determine the communities most engaged in the BSAI halibut fishery (that would then be used to determine in part the focus of the impact analysis in Section 7), staff of the Alaska Fisheries Science Center's (AFSC) Economic and Social Sciences Research Program utilized a set of fisheries involvement indices earlier developed using secondary data to explore the degree to which communities are involved in the BSAI/Area 4 commercial halibut fishery. Section 10.1 (Attachment A) provides complete documentation of the process, but in short, NMFS has developed a framework to create quantitative indices to help understand community well-being and participation in marine fisheries. AFSC staff have adapted this framework to develop a set of performance metrics to track fisheries participation over time using pre-existing data for all communities participating in commercial fisheries. These performance metrics provide information to examine the degree to which Alaska communities participate in different aspects of commercial, recreational, and subsistence fisheries. The analysis presented in Section 10.1 focuses specifically on those communities engaged in BSAI/Area 4 halibut harvesting and processing activities. The purpose of this analysis is to explore the degree to which communities are engaged in BSAI/Area 4 halibut harvesting and processing in Alaska fisheries and how their participation has

[20] See, for example, the summary discussion in the earlier BSAI halibut PSC limit revision analysis SIA (AECOM 2015).

changed over time. These indices can be used to provide information about the degree to which communities have sustained participation in this fishery over time.

Performance metrics of community participation in Alaska fisheries from 2010-2018 are reported. Data were collected for 59 communities or community groupings throughout the U.S. that had either some commercial Area 4 halibut fisheries landings or residents who owned vessels that were used in commercial Area 4 halibut fishing during this period. There were 27 communities that had some Area 4 halibut landings occurring in their community and were included in the commercial processing engagement analysis. In contrast, 54 of the 59 communities had a resident who owned a vessel that participated in commercial Area 4 halibut fishing and therefore were included in the commercial harvesting engagement analysis. To examine the relative harvesting and processing engagement of each community, a separate principal components factor analysis (PCFA) was conducted each year for each category to determine a community's engagement relative to all other Alaska communities. There are nine years in the study and two PCFAs are conducted each year (processing engagement and harvesting engagement) for a total of 18 different PCFAs.

A unique processing index and harvesting index value for each community in each year. These indices are relative scores in that they represent each community's engagement in commercial fisheries within a single year relative to all other communities in that year. Indices are then appended across all years to create a time series of relative engagement in these two aspects of commercial fisheries over time. Communities that scored above one (above one standard deviation from the mean of zero) for any year are classified as highly engaged for that particular year. It is important to note that since these are relative indices, a large change in the total number of active vessels over time will only cause a change in an index if one community loses a larger share of their vessels (or other commercial fisheries activities) than another community. If the change in number of active vessels (or other commercial fishing activities) are directly proportional to the existing number of vessels across communities, there will not be a change in the indices over time.

Table 2 shows the 13 communities that were determined to be highly engaged in BSAI/Area 4 commercial halibut harvesting in one or more years, by year, over the period 2010-2018. Table 3 provides similar information for the six communities that were highly engaged in BSAI/Area 4 commercial halibut processing for at least one year 2010-2018. Three of the six communities that appear in Table 3 also appear in Table 2 , for a total of 16 unique communities falling into either category.

**Table 2. Communities Highly Engaged in BSAI/Area 4 Commercial Halibut Harvesting for One or More Years, 2010-2018**

| Community/Area | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|
| Seattle MSA | 4.59 | 4.55 | 4.70 | 4.61 | 4.67 | 5.11 | 4.96 | 4.86 | 4.31 |
| Saint Paul Island | 1.91 | 1.81 | 1.95 | 2.13 | 2.71 | 2.04 | 1.76 | 2.37 | 2.59 |
| Homer | 1.22 | 1.63 | 2.03 | 1.55 | 1.90 | 2.10 | 2.40 | 2.74 | 3.00 |
| Kodiak | 2.30 | 1.67 | 1.56 | 1.79 | 1.82 | 1.85 | 2.33 | 1.58 | 1.57 |
| Togiak | -0.05 | 0.17 | 0.64 | 0.15 | 1.04 | 1.16 | 1.22 | 1.25 | 1.12 |
| Unalaska/Dutch Harbor | 0.97 | 0.71 | 0.81 | 0.84 | 0.96 | 1.38 | 1.14 | 0.96 | 1.49 |
| Other Washington | 0.67 | 0.52 | 0.21 | 0.30 | 0.94 | 0.89 | 1.02 | 1.02 | 1.40 |
| Other States (not AK/WA/OR) | -0.24 | -0.26 | -0.20 | 0.08 | 0.46 | 0.26 | 0.47 | 0.54 | 1.02 |
| Toksook Bay | 1.82 | 2.13 | 1.92 | 1.94 | 0.49 | -0.54 | -0.53 | -0.53 | -0.54 |
| Mekoryuk | 1.48 | 1.44 | 1.34 | 1.30 | 0.90 | -0.54 | -0.53 | -0.53 | -0.54 |
| Tununak | 1.23 | 1.28 | 1.26 | 1.40 | -0.35 | -0.54 | -0.53 | -0.53 | -0.54 |
| Savoonga | 0.21 | 0.02 | 0.54 | 0.39 | 1.08 | 1.02 | 0.74 | 0.81 | 0.42 |
| Juneau | 0.28 | 0.44 | 0.27 | 0.25 | 1.11 | 0.76 | 0.63 | -0.13 | -0.10 |

Note: Orange shaded cells are index scores above one (highly engaged).
Source: Adapted from Table 87 in Section 10.1.2 (Attachment A)

**Table 3. Communities Highly Engaged in BSAI/Area 4 Commercial Halibut Processing for One or More Years, 2010-2018**

| Community | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|
| Unalaska/Dutch Harbor | 3.58 | 3.33 | 3.80 | 3.93 | 4.35 | 4.39 | 4.21 | 4.34 | 3.93 |
| Akutan | 1.42 | 1.34 | 1.09 | 1.32 | 1.06 | 0.83 | 1.39 | 1.46 | 1.60 |
| Adak | -0.75 | 0.14 | 0.86 | 0.20 | 0.22 | 0.29 | 0.34 | 0.34 | 1.52 |
| Kodiak | 0.59 | 0.35 | 0.28 | 0.55 | 0.75 | 1.27 | 1.31 | 0.66 | 0.08 |
| Anchorage | -0.50 | 1.51 | 1.48 | 1.03 | 0.78 | -0.20 | -0.60 | -0.56 | -0.29 |
| Saint Paul Island | 2.40 | 2.24 | 0.81 | 0.74 | 0.09 | 0.40 | 0.40 | 0.61 | 0.50 |

Note: Orange shaded cells are index scores above one (highly engaged).
Source: Adapted from Table 85 in Section 10.1.2 (Attachment A)

Based on the community engagement index scores for both BSAI/Area 4 commercial halibut harvesting and processing engagement, communities were categorized into low (index scores below the mean of 0), medium (index scores between 0 and 0.5), medium-high (index scores between 0.50001 and 1), and high engagement (index scores above 1) for each year. The number of years a community is in each category for the processing and harvesting engagement indices is presented in Table 4 for all communities that had at least one year 2010-2018 with a medium, medium-high, or high level of engagement in either the harvesting or processing category. There are 31 communities or community groupings shown that had medium, medium-high, or high engagement in either harvesting or processing engagement.

**Table 4. BSAI/Area 4 Commercial Halibut Harvesting and Commercial Halibut Processing Level of Engagement by Community and Region, 2010-2018 (Number of Years)**

| Community* | Region | CDQ Group (BSAI Only) | Harvesting Engagement | | | | Processing Engagement | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Low | Medium | Medium-High | High | Low | Medium | Medium-High | High |
| Adak | BSAI | APICDA | 9 | 0 | 0 | 0 | 1 | 6 | 1 | 1 |
| Akutan | BSAI | APICDA | 9 | 0 | 0 | 0 | 0 | 0 | 1 | 8 |
| Atka | BSAI | APICDA | 7 | 2 | 0 | 0 | 3 | 5 | 1 | 0 |
| Saint George Island | BSAI | APICDA | 4 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unalaska/Dutch Harbor | BSAI | APICDA | 0 | 0 | 6 | 3 | 0 | 0 | 0 | 9 |
| Saint Paul Island | BSAI | CBSFA | 0 | 0 | 0 | 9 | 0 | 3 | 4 | 2 |
| Chefornak | BSAI | CVRF | 6 | 0 | 3 | 0 | 9 | 0 | 0 | 0 |
| Hooper Bay | BSAI | CVRF | 7 | 2 | 0 | 0 | 9 | 0 | 0 | 0 |
| Kipnuk | BSAI | CVRF | 5 | 0 | 4 | 0 | 9 | 0 | 0 | 0 |
| Mekoryuk | BSAI | CVRF | 4 | 0 | 1 | 4 | 9 | 0 | 0 | 0 |
| Newtok | BSAI | CVRF | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Quinhagak | BSAI | CVRF | 7 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Toksook Bay | BSAI | CVRF | 4 | 1 | 0 | 4 | 5 | 1 | 3 | 0 |
| Tununak | BSAI | CVRF | 5 | 0 | 0 | 4 | 6 | 3 | 0 | 0 |
| Nome | BSAI | NSEDC | 4 | 4 | 1 | 0 | 8 | 1 | 0 | 0 |
| Savoonga | BSAI | NSEDC | 0 | 4 | 3 | 2 | 7 | 2 | 0 | 0 |
| Togiak | BSAI | BBEDC | 1 | 2 | 1 | 5 | 9 | 0 | 0 | 0 |
| Twin Hills | BSAI | BBEDC | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 0 |
| Anchorage | GOA | | 4 | 5 | 0 | 0 | 5 | 0 | 1 | 3 |
| Homer | GOA | | 0 | 0 | 0 | 9 | 8 | 1 | 0 | 0 |
| Juneau | GOA | | 2 | 4 | 2 | 1 | 0 | 0 | 0 | 0 |
| King Cove | GOA | | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 0 |
| Kodiak | GOA | | 0 | 0 | 0 | 9 | 0 | 3 | 4 | 2 |
| Seward | GOA | | 9 | 0 | 0 | 0 | 7 | 1 | 1 | 0 |
| Sitka | GOA | | 2 | 5 | 2 | 0 | 9 | 0 | 0 | 0 |
| Wasilla | GOA | | 2 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delta Junction | Interior Alaska | | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| Seattle MSA | Pacific Northwest | | 0 | 0 | 0 | 9 | 9 | 0 | 0 | 0 |
| Other Washington | Pacific Northwest | | 0 | 2 | 4 | 3 | 8 | 1 | 0 | 0 |
| Oregon | Pacific Northwest | | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| All Other States | Other | | 3 | 4 | 1 | 1 | 0 | 0 | 0 | 0 |

*Communities not listed had low BSAI/Area 4 commercial halibut harvesting and processing engagement in all years, 2010-2018.

Source: Adapted from Table 88 in Section 10.1.3 (Attachment A)

Another component of the community analysis, however, looks at annual halibut harvest engagement for the years 2010-2018 for all communities with an annual average engagement of 2.0 or more catcher vessels with local ownership addresses, which illustrates trend information (see Table 31 in Section 5.7 below). This section also independently evaluates community fleet dependency on halibut on an annual average basis 2010-2018 to the extent data confidentiality constraints allow. This component of the community analysis also looks at annual halibut processing engagement for the years 2010-2018 for all communities with an annual average engagement of 0.5 or more locally operating shore-based processors that accepted BSAI/Area 4 halibut deliveries, which illustrates trend information (see Table 36 in Section 5.8 below). This section also independently evaluates processor dependency on halibut on an annual average basis 2010-2018 to the extent data confidentiality constraints allow. However, given the fewer

number of relevant processors, confidentiality restrictions do not permit community-by-community disclosure of processor first wholesale gross revenue information; this section does, however, present aggregated data by year, so overall regional dependency trends are apparent.

It is assumed that Alaska directed halibut fishery dependent communities identified would be those that would potentially benefit the most from the proposed management actions relative to the extent of the effective redistribution of overall halibut allocations between the BSAI groundfish fishery and the BSAI commercial halibut fishery that may occur with the various action alternatives (and to the degree that the BSAI halibut stock itself [spawning stock biomass] would benefit from these proposed actions). Conversely, the BSAI halibut communities identified for characterization are potentially those Alaska communities that could be most adversely impacted by the no-action alternative under at least some low abundance conditions.

In both the quantitative indicators and regional/community summaries, information is presented on community engagement in the BSAI groundfish and the BSAI commercial and subsistence[21] halibut fisheries, and, to the limited extent data are available, sport halibut fisheries. Among Alaska communities, the patterns of engagement and the nature of engagement in the BSAI groundfish and halibut fisheries are quite different, with the communities engaged in the relevant BSAI groundfish fishery sectors are mostly a subset of a much larger set of communities engaged in the relevant halibut fisheries. Within this general pattern, there is considerable variation by region and, thus, different patterns of the likely distribution of potential beneficial or adverse impacts that may be expected to result from the proposed action alternatives.

### 4.3.3 The Geography of Community Engagement and Dependency

The location of the Alaska communities listed Table 1 and/or Table 4 and their proximity to the BSAI management areas and the halibut regulatory areas in the BSAI may be seen in Figure 1. This figure also includes:

- Other Alaska communities mentioned in the text and tables of Section 5 of this SIA as having at least minimal direct involvement in the relevant BSAI groundfish sectors through being the community of ownership address of catcher vessels or catcher/processors active in the fishery in one or more years 2010-2018, or the location of shore-based processors that accepted relevant BSAI groundfish deliveries in one or more years 2010-2018.
- Alaska communities mentioned in Section 6.7 as being designated as the homeport of relevant BSAI groundfish catcher vessels or catcher/processors and the Alaska communities of ownership address for the LLP licenses used on those vessels in 2018, the most recent year for which data are available.
- Alaska communities noted in the tables and text of Section 5 of this SIA as engaged in the BSAI/Area 4 commercial halibut fishery through being the community of ownership address of an annual average of 2.0 or more catcher vessels active in the fishery for the period 2010-2018 and/or the location of one or more shore-based processors that accepted deliveries of BSAI halibut in any year during the period 2010-2018.

[21] In federally managed waters within and offshore of Alaska, residents of communities in areas of Alaska determined as rural by the Federal Subsistence Board have preferential subsistence-use access to a range of resources, including halibut, over Alaska residents of areas determined as non-rural. Areas of Alaska determined as non-rural include: Anchorage; the Fairbanks North Star Borough; the Homer, Kenai, and Seward areas within the Kenai Peninsula Borough; Valdez, the Wasilla/Palmer area within the Matanuska/Susitna Borough; the Juneau area, and the Ketchikan area (see https://www.doi.gov/sites/doi.gov/files/uploads/non_rural_areas_statewide.pdf). Among Alaska communities appearing on the bulleted lists of BSAI groundfish communities and/or BSAI halibut communities within this section, all have been determined to be in rural areas, except for Anchorage and Homer.

Figure 1 does not include Alaska communities of residence of crew members aboard catcher vessels or catcher/processors noted in Section 6.7 (cross-cutting community engagement ties), Section 10.2 (Attachment B, available catcher vessel Economic Data Report [EDR] crew data), or Section 10.3 (Attachment C, available catcher/processor EDR crew data).

The location of the Seattle MSA and the Newport/Lincoln County area of Oregon may be seen in Figure 2. This figure also includes:

- Other Washington and Oregon communities mentioned in the text and tables of Section 5 of this SIA as having at least minimal direct involvement in the relevant BSAI groundfish sectors through being the community of ownership address of catcher vessels or catcher/processors active in the fishery in one or more years 2010-2018, or the community of ownership address of floating processors that accepted relevant BSAI groundfish deliveries in one or more years 2010-2018.
- Washington and Oregon communities mentioned in Section 6.7 as being designated as the homeport of relevant BSAI groundfish catcher vessels or catcher/processors and the Washington and Oregon communities of ownership address for the LLP licenses used on those vessels in 2018, the most recent year for which data are available.

Figure 2 does not include Washington and Oregon communities of residence of crew members aboard catcher vessels or catcher/processors noted in Section 6.7 (cross-cutting community engagement ties), Section 10.2 (Attachment B, available catcher vessel EDR crew data), or Section 10.3 (Attachment C, available catcher/processor EDR crew data).

**Figure 1. Map of Selected Alaska Communities, Federal Fishery Management Areas, and International Pacific Halibut Commission Regulatory Areas**

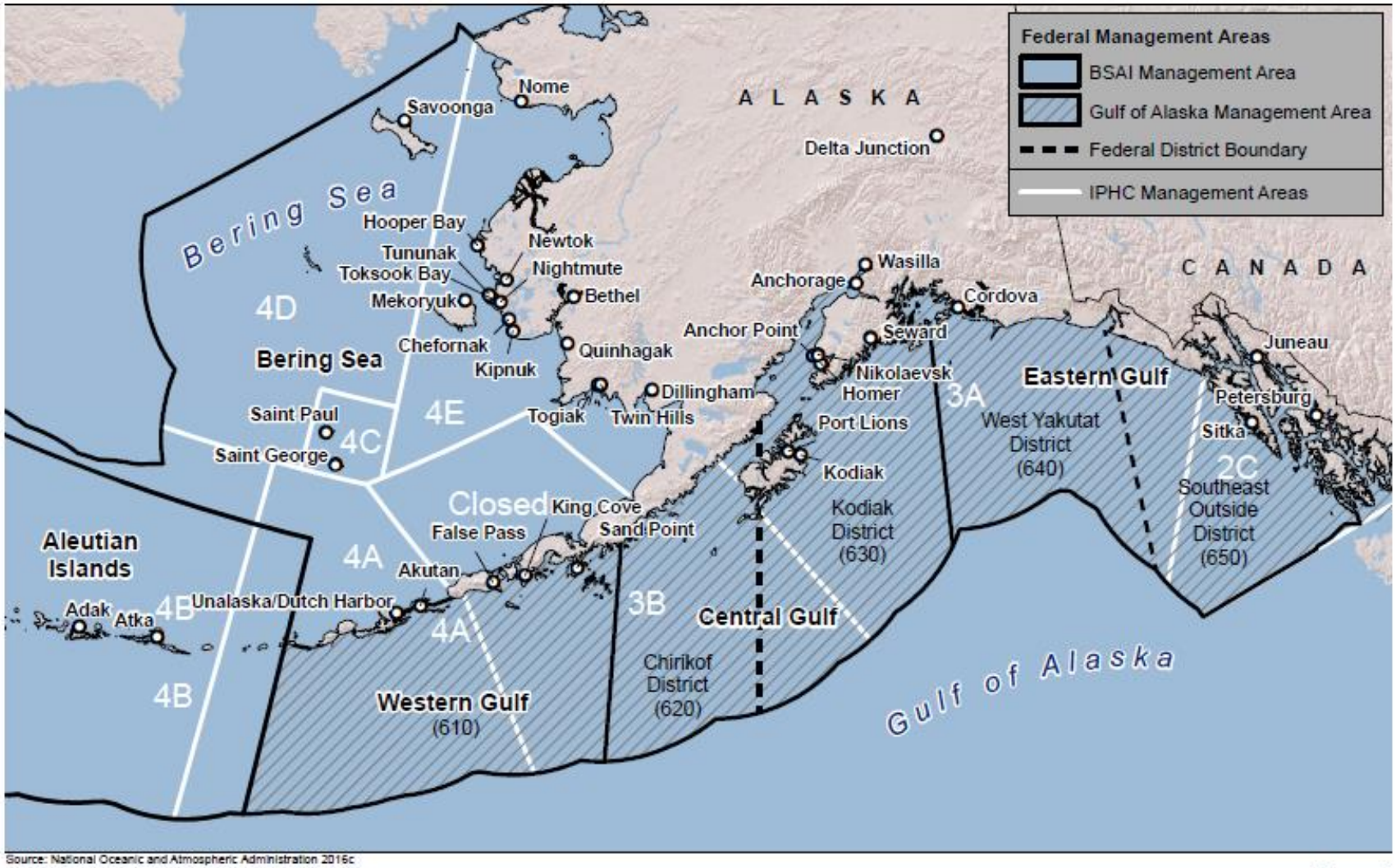
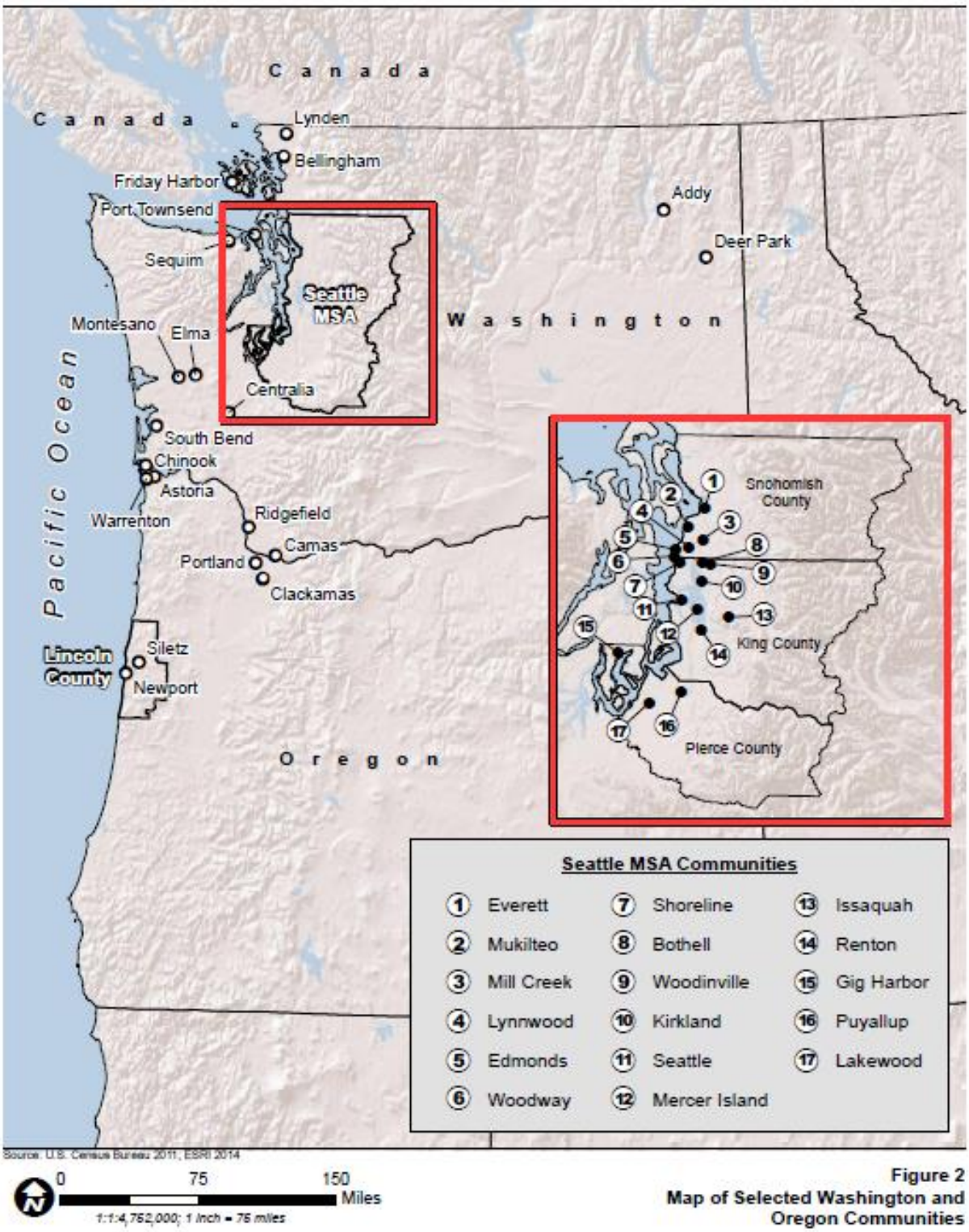



**Figure 1**
**Map of Selected Alaska Communities, Federal Fishery Management Areas, and International Pacific Halibut Commission Regulatory Areas**

**Figure 2. Map of Selected Washington and Oregon Communities**



## 4.4 Analysis of Alternatives

Section 7 provides a summary of potential community-level impacts by alternative. The analysis in that section is driven by the following components of the National Standard 8 guidelines:

- *The analysis should discuss each alternative's likely effect on the sustained participation of these fishing communities in the fishery.*
- *The analysis should assess the likely positive and negative social and economic impacts of the alternative management measures, over both the short and the long term, on fishing communities. Any particular management measure may economically benefit some communities while adversely affecting others. Economic impacts should be considered both for individual communities and for the group of all affected communities identified in the FMP.*[22]
- *A discussion of social and economic impacts should identify those alternatives that would minimize adverse impacts on these fishing communities within the constraints of conservation and management goals of the FMP, other national standards, and other applicable law (50 CFR 600.345).*

With respect to environmental justice foundational data presented by community in Section 6, for a minority population to be identified as one of potential concern, the proportion of minority residents in the geography being analyzed would need to be meaningfully greater than that of the general population and/or greater than 50 percent of the total population in the geography being analyzed. For a low-income population to be identified as of potential concern with respect to environmental justice analysis, the proportion of low-income residents in the geography being analyzed would need to be meaningfully greater than that of the general population. For analysis of Alaska communities, the general population used as a benchmark is that of the state of Alaska itself.

- Census figures from 2010 show that 66.5 percent of the residents of Alaska identified themselves as White, 14.1 percent as American Indian or Alaska Native, 3.5 percent as Black/African American, 5.6 percent as Asian, 1.1 percent as Pacific Islander, and 9.2 percent as "some other race" or "two or more races." Finally, 6.2 percent of the residents of any race in Alaska identified themselves as Hispanic. Based on race and ethnicity combined, 37.1 percent of Alaska's total population was composed of minority residents (that is, all residents other than those identified as White/non-Hispanic [race/ethnicity]).
- The latest employment estimate based on the 2013-2017 U.S. Census American Community Survey suggests that 354,045 were employed in the state of Alaska with an unemployment rate of 7.7 percent. Per capita income for people in Alaska was estimated at $35,065, median household income was $76,114, and median family income was $88,949. An estimated 10.2 percent of Alaska's residents were considered low-income, defined as those individuals living below the poverty level threshold (U.S. Census Bureau 2018).

For analysis of the Seattle MSA, where the demographics of individual sectors are known, the general population used as a benchmark is that of the state of Washington itself.

- Census figures from 2010 show that 77.3 percent of the residents of Washington identified themselves as White, 1.5 percent as American Indian or Alaska Native, 3.6 percent as Black/African American, 7.2 percent as Asian, 0.6 percent as Pacific Islander, and 9.9 percent as

[22] This portion of the National Standard 8 guidelines also includes the following: "*Impacts of both consumptive and non-consumptive uses of fishery resources should be considered."* There are no known non-consumptive uses of BSAI non-CDQ directed trawl fishery Pacific cod that would be relevant to this analysis. This topic is not considered further in this SIA.

"some other race" or "two or more races." Finally, 11.2 percent of the residents of any race in Washington identified themselves as Hispanic. Based on race and ethnicity combined, 27.5 percent of Washington's total population was composed of minority residents (that is, all residents other than those identified as White/non-Hispanic [race/ethnicity]) (U.S. Census Bureau 2011).

- The latest employment estimate based on the 2013-2017 U.S. Census American Community Survey suggests that 3,418,123 were employed in the state of Washington with an unemployment rate of 6.0 percent. Per capita income for people in Washington was estimated at $34,869, median household income was $66,174, and median family income was $80,233. An estimated 12.2 percent of Washington's residents were considered low-income, defined as those individuals living below the poverty level threshold (U.S. Census Bureau 2018).

Similarly, for analysis of the Newport, where the demographics of individual sectors are known, the general population used as a benchmark is that of the state of Oregon itself.

- Census figures from 2010 show that 83.6 percent of the residents of Oregon identified themselves as White, 1.4 percent as American Indian or Alaska Native, 1.8 percent as Black/African American, 3.7 percent as Asian, 0.3 percent as Pacific Islander, and 9.1 percent as "some other race" or "two or more races." Finally, 11.7 percent of the residents of any race in Oregon identified themselves as Hispanic. Based on race and ethnicity combined, 21.5 percent of Oregon's total population was composed of minority residents (that is, all residents other than those identified as White/non-Hispanic [race/ethnicity]) (U.S. Census Bureau 2011).
- The latest employment estimate based on the 2013-2017 U.S. Census American Community Survey suggests that 1,885,983 were employed in the state of Oregon with an unemployment rate of 6.8 percent. Per capita income for people in Oregon was estimated at $30,410, median household income was $56,119, and median family income was $69,031. An estimated 14.9 percent of Oregon's residents were considered low-income, defined as those individuals living below the poverty level threshold (U.S. Census Bureau 2018).

## 4.5 Data that would have been Useful but was Not Available

### 4.5.1 Location of Operation Data for Stationary Floating Processors

Stationary floating processors, if their location of operation is known to be within the municipal boundaries of an Alaska community, are attributed as shoreside processors operating in that community, as their operations are taxed in the same manner as shore-based processing plants, they may use utilities and port and harbor services like other processors, buy goods and services from the local support service sector, and generally may be more or less functionally equivalent to shore-based processing facilities. Location of operation, however, is not specified in some of the key data used for this analysis. The floating processor activity in this SIA, as noted in Section 5.6, is, in the absence of good operational location data, assigned to the community of floating processor ownership address.

Also, as noted in Section 5.6, from a community impact perspective, stationary floating processors operating outside of a community's municipal boundaries have a different type of engagement with even nearby Alaska communities than do shoreside processors, including stationary floating processors, operating in those communities. For example, while not shown in the data, one stationary floating processor is known to have operated in Unalaska Island's Beaver Inlet, outside of the municipal boundaries of the City of Unalaska, during multiple years 2010-2018. While Unalaska/Dutch Harbor derived a level of benefit from support activities for this operation that occurred in the community, it was a different order of magnitude than the benefits that accrued from the activities of shoreside processors

operating within the community during this same period that, among others, included accepting commercial fisheries landings on a regular basis that generated substantial public revenue in the form of payment of city fish taxes. This same processing platform moved inside city boundaries in late 2017 but is not shown in the available data as doing so.[23]

## 4.5.2 EDR Data for BSAI Crew Employment and Earnings

EDR data are available for the BSAI groundfish Amendment 80 sector and are utilized in this analysis. However, EDR data are unavailable for the BSAI groundfish hook-and-line catcher vessel and catcher/processor sectors. Further, some EDR data are available for some BSAI groundfish TLAS sector vessels, but those data were collected for only those vessels that also were active in the Gulf of Alaska (GOA) (i.e., the vessels that filled out a GOA EDR form) and then the data are specific to those GOA activities (i.e., no information specific to activities in the BSAI were collected).

In the absence of EDR data for BSAI TLAS catcher vessel crew employment, GOA EDR data for crew on BSAI TLAS catcher vessels that reported EDR data for the GOA and operated in the both the BSAI and GOA in 2017 (the most recent year for which data are available) were used. As shown in Table 5, the available data were limited.

**Table 5. BSAI Groundfish TLAS Vessels that Filed GOA EDR Reports, 2017**

| Community of Ownership Address of CV (most current data year) | CVs Active in BSAI Groundfish TLAS Fishery 2017 | CVs Active in BSAI Groundfish TLAS Fishery in 2017 that filed GOA EDR for 2017 (number) | CVs Active in BSAI Groundfish TLAS Fishery any year 2010-2018 | CVs Active in BSAI Groundfish TLAS Fishery any year 2010-2018 that filed GOA EDR in 2017 | CVs Active in BSAI Groundfish TLAS Fishery any year 2010-2018 that filed GOA EDR in 2017 (percent) |
|---|---|---|---|---|---|
| Alaska | 6 | 6 | 10 | 10 | 100% |
| Washington | 49 | 21 | 78 | 33 | 42% |
| Oregon and Other States | 9 | 3 | 18 | 6 | 33% |
| **Total** | **64** | **30** | **106** | **49** | **46%** |

Source: GOA Catcher Vessel EDRs

It was assumed that these data were still useful for rough numbers of crew members for the limited number of vessels for which data exist, as vessels likely had similar crews for both the BSAI and GOA trawl groundfish fisheries, but no crew earnings data were applicable to the BSAI fisheries. Overall, the unavailability of BSAI-specific data in combination of the total unavailability of data for a substantial number of catcher vessels that participated in the BSAI TLAS fishery and all catcher vessels and catcher/processors that participated in the BSAI groundfish hook-and-line fishery is a substantive obstacle to a comprehensive analysis of the human dimensions of the fishery and the community footprint of potential social impacts associated with the proposed management actions.

No EDR processing crew employment and earnings data similar to those available for GOA groundfish shore-based processors are available for BSAI groundfish shoreside processors. Overall, the unavailability of these data is also a substantive obstacle to a comprehensive analysis of the human dimensions of the fishery and the community footprint of potential social impacts associated with the proposed management actions.

Similarly, the lack of crew employment and earnings data and processing crew employment and earnings data in the BSAI commercial halibut fishery is also a substantial impediment to a comprehensive analysis

[23] This platform underwent modifications at the time of its move that resulted in its reclassification by the US Coast Guard as a "permanently moored craft."

of the human dimensions of the fishery and the community footprint of potential social impacts associated with the proposed management actions.

### 4.5.3 First Wholesale Value of Products Produced by BSAI Shoreside Processors for Species Other Than Groundfish

Alaska Fisheries Information Network (AKFIN) staff have provided data to show the relative economic importance of species (and single species harvested in different area and gear fisheries) processed by shoreside processing firms that take deliveries of BSAI groundfish or halibut. This shoreside processor "diversity" information is intended, in part, to provide quantitatively based insight into the level of engagement in and/or dependency on a particular fishery by shoreside processors operating in a given community or group of communities, as measured by gross or, better, net revenues.

Ideally, these comparisons of relative engagement/dependency would be made at the first wholesale level and reflect net income to the effected processors. However, at least two limitations in the available data prevent that approach. The first limitation is the lack of complete fixed cost and variable cost information to deduct from the gross revenue to calculate the gross margin. If only variable cost data were available, the contribution margin, or dollar contribution per unit, could be calculated. The lack of both types of cost data prevent the calculation of any measure of economic efficiency within or between sectors.

The second limitation results from a lack of comparable first wholesale gross revenue values across all species. AKFIN has reliable estimates of first wholesale gross revenues for groundfish species, but first wholesale gross revenue estimates for halibut, crab, herring, and salmon are less reliable. To generate the latter estimates, AKFIN staff must use value data from Commercial Operator Annual Report (COAR) forms and landings data from the Catch Accounting System (CAS) data. Previous attempts to generate comparable information by species have not provided results deemed sufficiently reliable for routine use in the analysis of management actions. Therefore, AKFIN staff provide comparisons of ex-vessel expenditures (i.e., ex-vessel gross revenues received from the processor by vessels making deliveries at the processor) by species/fishery for shoreside processors processor diversification comparisons in the absence of more useful data. Comparing ex-vessel value at the processor level, however, reflects a cost to the processor and not income. As a result, the comparison should be considered a very rough proxy for the analysis of the importance of each species or species group to the economic viability of processing firms and, by extension, to the communities in which they operate.

### 4.5.4 Systematically Collected Time Series Data on Fisheries Support Service Sector Entities and Community Patterns of Catcher Vessel, Catcher/Processor, and Shoreside Processor Expenditures

No systematically collected time series data are available support services in the relevant fishing communities. While comprehensive fishing community profiles of the key communities of Adak, Unalaska/Dutch Harbor, Akutan, King Cove, Kodiak, Sand Point, St. George, and St. Paul are available and contain detailed information on fishery support service businesses, these profiles are now dated to varying degrees.[24] Compiled in part using ethnographic research in each community, these profiles include operational profiles and qualitative employment information for attempted 100 percent samples of locally identified direct fishery support service businesses in all communities except Kodiak, where representative samples were sought.

[24] While no updated community profiles are yet available, supplemental information was collected in Unalaska/Dutch Harbor and Akutan in July 2019 and informed this analysis.

If systematically collected time series data on catcher vessel, catcher/processor, and shoreside processor support service expenditures by community and type of service provider were available, more accurate social and economic analyses of sector and community impacts would be possible, including a more accurate picture of local multipliers for fishery related expenditures. Additionally, this type of information would help in associating vessels with particular communities based on quantitative data for the purposes of social impact assessment as a supplement to, if not a replacement for, assigning vessels to communities based on for example, ownership address, homeport, or LLP license ownership address as proxies for revenue flows.

### 4.5.5 Current Data on Subsistence Harvest and Use of Halibut and Pacific Cod

Subsistence use of both halibut and Pacific cod has deep roots and remain important parts of the social, cultural, and economic fabric of life in the communities of the BSAI region. Pacific cod shows up as a resource in the archaeological record and patterns of use continue to evolve. In the communities of central focus of the BSAI groundfish portion of this analysis (Unalaska/Dutch Harbor, Akutan, and King Cove), commercial and subsistence fisheries are intertwined. For example, while Pacific cod is still retained for subsistence or personal use from commercial catch, recent work (Reedy-Maschner and Maschner 2012) finds a substantial amount of wild foods formerly harvested are now purchased or increasingly purchased. Pacific cod in particular is often purchased from processors after being de-wormed (Reedy 2016). Some of these purchases are from processors operating in the community, while others are not.

For the BSAI/Area 4 halibut portion of the analysis, there is clear regional variation the amounts of halibut harvested for subsistence relative to the amounts of all fish harvested for subsistence. For example, Alaska Department of Fish and Game (ADFG) Community Subsistence Information System (CSIS) data suggest that in the Pribilof communities, which bridge the Aleutian Pribilof Islands Community Development Association (APICDA) and Central Bering Sea Fishermen's Association (CBSFA) regions, halibut is in the mid-80s as a percentage all subsistence fish harvested and for other key communities in the rest of the APICDA region analogous figures range from the mid-20s to the mid-40s. In contrast, the analogous figures for key communities in the Bristol Bay Economic Development Corporation (BBEDC), Coastal Villages Region Fund (CVRF), and Norton Sound Economic Development Corporation (NSEDC) regions range from less than one percent to 12 percent, but it is critical to note that CSIS type of data do not exist for multiple communities and that all of the available is now dated (some of it being in excess of 30 years old).

It is also important to note that often percentage harvest figures are of limited utility when a relatively low-volume resource may be of critical importance at a particular time of year or at particular points of longer relative scarcity/abundance cycles of other resources. While there are no direct impacts anticipated to either halibut or Pacific cod subsistence as a result of the proposed alternatives, indirect and/or cumulative impacts could occur. Further, baseline information the retention of subsistence halibut and/or Pacific cod from commercial fisheries harvest in some of the key commercial fishing communities relevant to the proposed management actions is unavailable. Together, this lack of data limits the ability to fully analyze potential interactive commercial and subsistence fishery impacts of the proposed fishery management alternatives.

### 4.5.6 Local Knowledge and Traditional Knowledge

Per National Standard 2 – Scientific Information (a)(6)(ii)(C):

> *Relevant local and traditional knowledge (e.g., fishermen's empirical knowledge about the behavior and distribution of fish stocks) should be obtained, where appropriate, and considered when evaluating the BSIA* [best scientific information available] (50 CFR 600.315[25])

There are no known documented sources of traditional knowledge or local knowledge that would directly inform the analysis of the management actions being analyzed in this document, based in part on the nature of the proposed management action alternatives. Specifically, the action alternatives would in part, under conditions of low abundance, effectively reallocate halibut away from PSC use in several BSAI groundfish fishery sectors and toward use as quota in the directed commercial halibut fishery for the benefit of the participants in that fishery (and potentially facilitate access to more halibut for subsistence use from catch retained from commercial fishing, among other means). Regional small boat halibut fisheries are one of the intended beneficiaries of the action alternatives being considered. Any adverse impacts to regional small boat halibut fisheries from potential increases in halibut PSC limits under conditions of high abundance would presumably be offset by those abundance conditions themselves. The problematic nature of the no-action alternative for directed halibut fishery participants is inherently recognized in the Council's purpose and need statement. In short, the nature of the proposed action alternatives makes determining appropriate potential sources of traditional knowledge or local knowledge that would inform management decision making on the action alternatives challenging. That is not to say that traditional knowledge and/or local knowledge that could inform the analysis of impacts of the proposed management actions on specific communities or sets of communities does not exist. Rather, that information is not currently known to have been documented or have been otherwise readily available to or accessible by the study team.

Further, it is relevant to note that Action Module 4 of the Bering Sea Fishery Ecosystem Plan (FEP) aims to develop protocols for using local knowledge and traditional knowledge in management and understanding potential impacts of Council decisions on subsistence use. The Bering Sea FEP core document was approved by the Council in December 2018, and Action Module 4 (Local Knowledge/Traditional Knowledge/Subsistence) was prioritized at that time. For this module, the intent is to create a clear set of directions for the Council regarding best practices for solicitation and consideration of local knowledge and traditional knowledge, and how impacts to subsistence are understood and incorporated into analyses. The intent is not data collection but rather best practice protocols that can be applied to improve ongoing Council decision making. The Council clarified that the Action Module is intended to produce work products within a two- to three-year timeframe, thus, in the near future, it is likely the Council will be increasingly receiving information from local knowledge and traditional knowledge sources in management action analyses.

Specifically, the Council also endorsed the draft Action Module workplan in principle, as revised in response to Council, Ecosystem Committee, and Scientific and Statistical Committee comments in June 2019. Similarly, the Council is in the process of developing a taskforce for this Action Module, with taskforce members to be appointed by the Council Chair following a call for nominations. The taskforce for this Action Module is recommended to be up to 15 people, with approximately equal representation of Local Knowledge, Traditional Knowledge, and subsistence expertise, and drawing both from experts and knowledge bearers. This taskforce will include representatives from Alaska Native Organizations/Tribes, Bering Sea communities, Bering Sea fisheries, and researchers who are experienced in local knowledge, traditional knowledge, and subsistence issues.

[25] The National Standard 2 guidelines referenced in this SIA, current as of August 30, 2019, are from the Electronic Code of Federal Regulations (CFR) Title 50, Chapter VI, Part 600, Subpart D, Section 600.315 (cited as 50 CFR 600.315) are available at https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=6b0acea089174af8594db02314f26914&mc=true&r=SECTION&n=se50.12.600_1315 accessed 09/04/19.

# 5 Quantitative Indicators of Community Fishery Engagement and Dependency

The sections below provide quantitative participation information, within the bounds of confidentiality restrictions, for the communities most directly engaged in and dependent on relevant sectors with the BSAI groundfish and halibut fisheries. Specifically, Sections 5.1 through 5.8 include a series of tables containing a range of quantitative information describing the distribution of sector-specific community engagement (or participation) in and dependency (or reliance) on the commercial BSAI groundfish and/or halibut fisheries for the following sectors:

- BSAI groundfish TLAS catcher vessels (Section 5.1)
- BSAI groundfish Amendment 80 sector catcher/processors (Section 5.2)
- BSAI groundfish hook-and-line catcher vessels (Section 5.3)
- BSAI groundfish hook-and-line catcher/processors (Section 5.4)
- Shore-based processors operating in Alaska accepting BSAI groundfish deliveries from TLAS and/or hook-and-line sector catcher vessels and/or CDQ BSAI groundfish deliveries harvested by vessels in any sector (Section 5.5)
- Floating processors operating in Alaska accepting BSAI groundfish deliveries from TLAS and/or hook-and-line sector catcher vessels and/or CDQ BSAI groundfish deliveries harvested by vessels in any sector (Section 5.6)
- BSAI halibut catcher vessels (Section 5.7)
- BSAI shore-based processors operating in Alaska accepting BSAI halibut deliveries (Section 5.8)

Additionally, this section also summarizes community and regional engagement in the BSAI halibut subsistence fishery (Section 5.9) and the BSAI sport halibut fishery (Section 5.10).

This information is summarized, on a regional/community basis, in the region/community specific discussions in Section 6 of this document.

## 5.1 BSAI Groundfish Trawl Limited Access Sector Catcher Vessels

The following tables provide a series of quantitative indicators of sector engagement in and dependency on the BSAI groundfish fishery, by community and/or regional geography depending on data confidentiality restrictions, for BSAI groundfish TLAS catcher vessels by community of ownership address, plus the American Fisheries Act (AFA) status of these vessels, as noted in the following paragraphs. For Alaska communities, overall community of ownership address catcher vessel fleet dependency is also shown to the extent possible within data confidentiality restrictions.

Table 6 provides a count, by historic ownership address community[26] and year (2010-2018), of BSAI TLAS catcher vessels for all Alaska communities, the Seattle MSA, all other communities in Washington; all communities in Oregon; and state totals for Alaska, Washington, Oregon, and all other states combined, along with annual average counts and percentages, and the number of unique vessels participating over the 2010-2018 period. As shown, the largest component of fleet ownership during any

[26] "Historic" ownership address is defined as the ownership address for the vessel in the individual data years shown (as opposed to the most recent year ownership address of the vessel, if different).

given year is, by far, the Seattle MSA (on an average annual basis accounting for about three-quarters of all participating vessels), followed by Newport, Oregon (annually averaging over 10 percent of all participating vessels). Within Alaska, only Kodiak averages more than one vessel participating per year over this timespan, and it is the only Alaska community with any vessels participating in the eight most recent years for which data are available (2011-2018).

Table 7 provides BSAI TLAS catcher vessel ex-vessel gross revenue information by community of historic ownership address and year (2010-2018) to the extent possible within data confidentiality restrictions, along with annual averages in terms of dollars and percentages. For Alaska, the state total is equivalent to the Kodiak total, as in all non-confidential years only vessels with Kodiak ownership addresses appear in the data. This table clearly shows the concentration of the fleet ex-vessel values in the Pacific Northwest in general and the Seattle MSA in particular. In this table, for all states other than Alaska and Washington, the limited number of vessels with ownership addresses outside of Newport do not permit the disclosure of Newport only revenues and an "other Oregon" and/or "other Oregon and all other states" subtotals, which suggests the relative importance of Newport as a fleet center outside of Alaska and Washington.

Table 8 provides information on BSAI TLAS catcher vessel dependency on BSAI TLAS groundfish compared to all other areas, gear types, and species fished by those same vessels as measured by ex-vessel gross revenues. As shown, dependency on BSAI TLAS groundfish, as measured in percentage of total ex-vessel revenues, ranges between seven and nine percent for vessels with Alaska and Seattle MSA addresses, as well as those with ownership addresses for the state of Washington as a whole and for all areas combined. Higher percentages are shown for those vessels with Washington ownership addresses outside of the Seattle MSA and those with ownership addresses in Oregon and all states other than Alaska, Washington, and Oregon combined.

Table 9 provides information on "community catcher vessel fleet" dependency on BSAI TLAS groundfish compared to all other areas, gear types, and species fished by the "community fleet" vessels to the extent possible given data confidentiality restrictions (with the "community fleet" defined as all commercial fishing catcher vessels with ownership addresses in the communities with at least one vessel active in the BSAI TLAS fishery during the year span noted, not just vessels that participated in the BSAI TLAS fishery itself). As shown, BSAI TLAS groundfish accounted for between less than one percent of the "community fleet" total ex-vessel gross revenues of Alaska communities (which was exclusively Kodiak in eight of the nine years encompassed by the data), to roughly seven percent for the Seattle MSA, and to roughly 12 percent for communities in Oregon and all states other than Alaska and Washington.

Table 10 provides information on AFA status of BSAI TLAS catcher vessels on an annual average count and percentage basis by ownership community for the most recent data year (2018). Inclusion of vessels in the AFA class would likely reduce, to some degree, the vulnerability of individual vessels to adverse impacts from potential BSAI halibut ABM PSC limit reductions through co-op or other internal vessel class compensation mechanisms and/or separate accounting of PSC thresholds unique to that vessel class (thereby insulating these vessels somewhat from adverse consequences of actions of vessels outside of their restricted class over which they have very little influence or control). As shown, the large majority of participating vessels with Washington ownership addresses are AFA vessels, unlike vessels with Alaska and Oregon ownership addresses.

**Table 6. Individual BSAI TLAS Catcher Vessels by Community of Vessel Historic Ownership Address, 2010-2018 (number of vessels)**

| Geography | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 (number) | Annual Average 2010-2018 (percent) | Unique Vessels 2010-2018 (number) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kodiak | 1 | 6 | 7 | 5 | 2 | 3 | 3 | 6 | 6 | 4.3 | 7.08% | 10 |
| Petersburg | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.18% | 1 |
| Alaska Total | 2 | 6 | 7 | 5 | 2 | 3 | 3 | 6 | 6 | 4.4 | 7.26% | 10 |
| Bellingham | 2 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1.7 | 2.72% | 6 |
| Camas | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0.4 | 0.73% | 1 |
| Chinook | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0.36% | 1 |
| Seattle MSA* | 43 | 39 | 45 | 43 | 47 | 43 | 48 | 47 | 53 | 45.3 | 74.05% | 76 |
| South Bend | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0.3 | 0.54% | 1 |
| Washington Total | 46 | 44 | 47 | 47 | 49 | 45 | 50 | 49 | 55 | 48.0 | 78.40% | 78 |
| Newport | 7 | 8 | 7 | 8 | 6 | 6 | 7 | 7 | 6 | 6.9 | 11.25% | 12 |
| Portland | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.8 | 1.27% | 1 |
| Siletz | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.3 | 0.54% | 3 |
| Oregon Total | 8 | 8 | 8 | 9 | 7 | 7 | 8 | 9 | 8 | 8.0 | 13.07% | 15 |
| All Other States Total | 2 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0.8 | 1.27% | 3 |
| **Grand Total** | **58** | **59** | **64** | **61** | **58** | **56** | **61** | **64** | **70** | **61.2** | **100.00%** | **103** |

*Seattle MSA includes all communities in King, Pierce, and Snohomish counties (Edmonds, Gig Harbor, Lakewood, Lynnwood, Renton, Shoreline, Seattle, Woodinville and Woodway are represented as active in the 2010-2018 data).

Note: Due to CV ownerhship movement between communities over the years shown, total unique CVs per community may not sum to state or grand totals.

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

**Table 7. BSAI TLAS Catcher Vessel Ex-Vessel Gross Revenues by Community of Vessel Historic Ownership Address, 2010-2018 (millions of 2018 real dollars)**

| Geography | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 ($ millions) | Annual Average 2010-2018 (percent) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Alaska Total | * | $0.60 | $1.64 | $1.17 | * | $0.16 | $0.49 | $1.47 | $1.57 | $0.84 | 2.13% |
| Seattle MSA | $21.11 | $32.94 | * | $35.97 | * | * | * | * | $37.41 | $32.58 | 82.47% |
| All Other Washington | $0.62 | $2.14 | * | $1.46 | * | * | * | * | $0.72 | $1.11 | 2.82% |
| Washington Total | $18.92 | $31.20 | $38.29 | $34.53 | $33.54 | $23.67 | $29.50 | $36.49 | $38.13 | $33.70 | 85.29% |
| OR and All Other States | * | $6.54 | $8.03 | $5.32 | * | $3.33 | $4.68 | $4.44 | $4.26 | $4.97 | 12.58% |
| **Grand Total** | **$25.56** | **$42.22** | **$51.91** | **$43.92** | **$40.45** | **$28.43** | **$35.90** | **$43.22** | **$43.96** | **$39.51** | **100.00%** |

*Denotes confidential data.
Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

**Table 8. BSAI TLAS Catcher Vessel Ex-Vessel Gross Revenue Diversification by Community of Vessel Historic Ownership Address, All Communities, 2010-2018 (millions of 2018 real dollars)**

| Geography | Annual Average Number of BSAI TLAS Vessels 2010-2018 | BSAI TLAS Vessels Annual Average Ex-Vessel Gross Revenues from BSAI TLAS Only 2010-2018 ($ millions) | BSAI TLAS Vessels Annual Average Total Ex-Vessel Gross Revenues from All Area, Gear, and Species Fisheries 2010-2018 ($ millions) | BSAI TLAS Vessels BSAI TLAS Ex-Vessel Value as a Percentage of Total Ex-Vessel Gross Revenue Annual Average 2010-2018 |
|---|---|---|---|---|
| Alaska Total | 4.44 | $0.79 | $10.67 | 7.44% |
| Seattle MSA | 45.33 | $32.58 | $412.10 | 7.91% |
| All Other Washington | 2.67 | $1.11 | $3.30 | 33.78% |
| Washington Total | 48.00 | $33.70 | $415.40 | 8.11% |
| Oregon and All Other States | 8.00 | $4.63 | $23.12 | 20.03% |
| **Grand Total** | 61.22 | $39.51 | $449.19 | 8.80% |

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

**Table 9. BSAI TLAS Catcher Vessel and All Catcher Vessel Ex-Vessel Gross Revenue Diversification by Community of Vessel Historic Ownership Address, 2010-2018 (millions of 2018 real dollars)**

| Geography | Annual Average Number of BSAI TLAS Vessels 2010-2018 | Annual Average Number of All Commercial Fishing CVs in those Same Communities (the "Community CV Fleet") 2010-2018 | All Commercial Fishing CVs Annual Average Ex-Vessel Gross Revenues from BSAI TLAS Only 2010-2018 ($ millions) | All Commercial Fishing CVs Annual Average Total Ex-Vessel Gross Revenues from All Areas, Gears, and Species Fisheries 2010-2018 ($ millions) | All Commercial Fishing Vessels TLAS Ex-Vessel Gross Revenue as a Percentage of Total Ex-Vessel Gross Revenue Annual Average 2010-2018 |
|---|---|---|---|---|---|
| Alaska Total | 4.44 | 509.9 | $0.79 | $171.95 | 0.46% |
| Seattle MSA | 45.33 | 294.8 | $32.58 | $454.14 | 7.17% |
| All Other Washington | 2.67 | 114.2 | $1.11 | $36.44 | 3.06% |
| Washington Total | 48.00 | 409.00 | $34.13 | $490.58 | 6.96% |
| Oregon and All Other States | 8.00 | 28.1 | $4.63 | $39.63 | 11.68% |
| **Grand Total** | 61.22 | 947.0 | $39.51 | $702.16 | 5.63% |

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

**Table 10. BSAI Groundfish Trawl Catcher Vessel AFA Program Designation by Community of Vessel Ownership Address, 2018**

| | Number of BSAI Trawl CVs | | | Percent of BSAI Trawl CVs | | |
|---|---|---|---|---|---|---|
| | | AFA Status | | | AFA Status | |
| Geography | Total CVs | Yes | No | Total CVs | Yes | No |
| Kodiak | 6 | 3 | 3 | 8.57% | 4.29% | 4.29% |
| Seattle MSA* | 53 | 43 | 10 | 75.71% | 61.43% | 14.29% |
| All Other Washington | 2 | 0 | 2 | 2.86% | 0.00% | 2.86% |
| Washington Total | 55 | 43 | 12 | 78.57% | 61.43% | 17.14% |
| Newport | 6 | 0 | 6 | 8.57% | 0.00% | 8.57% |
| All Other Oregon | 2 | 1 | 1 | 2.86% | 1.43% | 1.43% |
| Oregon Total | 8 | 1 | 7 | 11.43% | 1.43% | 10.00% |
| Other States | 1 | 1 | 0 | 1.43% | 1.43% | 0.00% |
| **Total** | **70** | **48** | **22** | **100.00%** | **75.71%** | **24.29%** |

*Seattle MSA includes all communities in King, Pierce, and Snohomish counties.

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

## 5.2 BSAI Groundfish Amendment 80 Sector Trawl Catcher/Processors

The following series of tables provide a series of quantitative indicators of Amendment 80 sector engagement in and dependency on the BSAI groundfish fishery, by community and/or regional geography of ownership address depending on data confidentiality restrictions, as noted in the following paragraphs.

Table 11 provides a count, by community of ownership address and year (2010-2018), of BSAI Amendment 80 groundfish trawl catcher/processors for the Seattle MSA, all other Washington communities, and "all other states" (all states other than Alaska, Washington, and Oregon) combined, along with annual average counts and percentages and the total number of unique vessels. There were no BSAI Amendment 80 catcher/processors with Alaska or Oregon ownership addresses active during the 2010-2018 period. As shown, the largest component of fleet ownership during any given year is, by far, the Seattle MSA, which included all vessels with Washington ownership addresses in the most recent eight years for which data are available (annually averaging over 80 percent of all participating vessels), followed by "all other states" combined (annually averaging under 20 percent of all participating vessels).

Table 12 provides BSAI Amendment 80 groundfish trawl catcher/processor first wholesale gross revenue information by community of ownership address and year (2010-2018) to the extent possible within data confidentiality restrictions, along with annual averages in terms of dollars and percentages. This table clearly shows the concentration of the fleet first wholesale gross revenues in the Seattle MSA (annually averaging 82 percent of the sector total); the values for all other Washington communities plus all other states needed to be combined in order to show a grand total that would have otherwise been precluded by confidentiality restrictions.

Table 13 provides information on BSAI Amendment 80 groundfish catcher/processor dependency on BSAI groundfish compared to all other areas, species, and gear types fished by those same vessels. As shown, dependency on BSAI groundfish, as measured in percentage of annual average 2010-2018 total first wholesale gross revenues, was about 79 percent for Seattle MSA ownership address vessels. BSAI Amendment 80 groundfish catcher/processors with Washington ownership addresses outside of the Seattle MSA and in all other states combined showed about 94 percent dependency on the relevant fishery.

Table 14 provides information on "community catcher/processor fleet" dependency on BSAI Amendment 80 groundfish first wholesale gross revenue compared to all other areas, gear types, and species fished by the "community catcher/processor fleet" to the extent possible given data confidentiality restrictions (with the "community catcher/processor fleet" defined as all commercial catcher/processors with ownership addresses in the communities with at least one vessel active in the BSAI Amendment 80 sector at any time 2010-2018). BSAI Amendment 80 groundfish first wholesale gross revenues accounted for approximately one-quarter of Seattle MSA "community catcher/processor fleet" first wholesale gross revenues on an annual average basis over the years 2010-2018, while they accounted for nearly the entire "community catcher/processor fleet" total for all other participating communities, with this difference due, no doubt, to the much larger and more diversified catcher/processor fleet in the Seattle MSA.

**Table 11. Individual Amendment 80 Trawl Catcher/Processors by Community of Vessel Historic Ownership Address, 2010-2018 (number of vessels)**

| Geography | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 (number) | Annual Average 2010-2018 (percent) | Total Unique CPs 2010-2018 (number) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seattle MSA* | 16 | 17 | 16 | 15 | 15 | 15 | 16 | 14 | 14 | 15.3 | 81.18% | 18 |
| Sequim WA | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.59% | 1 |
| Washington Total | 17 | 17 | 16 | 15 | 15 | 15 | 16 | 14 | 14 | 15.4 | 81.76% | 19 |
| All Other States Total** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 3.4 | 18.24% | 5 |
| **Grand Total** | **20** | **20** | **19** | **18** | **18** | **18** | **19** | **19** | **19** | **18.9** | **100.00%** | **23** |

*Seattle MSA includes all communities in King, Pierce, and Snohomish counties (Kirkland, Renton, and Seattle are represented as active in the 2010-2018 data).

**All vessels in this category have ownership addresses in states other than Alaska, Washington, or Oregon.

Note: Due to CP ownerhship movement between communities over the years shown, total unique CPs per community or state may not sum to state or grand totals.

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

**Table 12. BSAI Amendment 80 Trawl Catcher/Processor First Wholesale Gross Revenues by Community of Vessel Historic Ownership Address, 2010-2018 (millions of 2018 real dollars)**

| Geography | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 ($ millions) | Annual Average 2010-2018 (percent) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Seattle MSA | $272.64 | $325.18 | $336.71 | $258.31 | $269.30 | $247.16 | $263.54 | $259.59 | $270.93 | $278.15 | 81.63% |
| Other WA and Other States | $51.14 | $59.97 | $60.82 | $49.27 | $47.29 | $43.29 | $42.96 | $99.77 | $108.68 | $62.58 | 18.37% |
| **Grand Total** | **$323.78** | **$385.15** | **$397.52** | **$307.59** | **$316.59** | **$290.45** | **$306.50** | **$359.36** | **$379.61** | **$340.73** | **100.00%** |

*Denotes confidential data.

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

**Table 13. BSAI Groundfish Trawl Catcher/Processor First Wholesale Gross Revenue Diversification by Community of Vessel Historic Ownership Address, All Communities, 2008-2018 (millions of 2018 real dollars)**

| Geography | Annual Average Number of BSAI Amendment 80 Trawl CPs 2010-2018 | BSAI Amendment 80 Trawl CPs Annual Average First Wholesale Gross Revenues from BSAI Trawl-Caught Groundfish Only 2010-2018 ($ millions) | BSAI Amendment 80 Trawl CPs Annual Average Total First Wholesale Gross Revenues from All Area, Gear, and Species Fisheries 2010-2018 ($ millions) | BSAI Amendment 80 Trawl CPs BSAI Trawl-Caught Groundfish First Wholesle Gross Revenue as a Percentage of Total First Wholesale Gross Revenue Annual Average 2010-2018 |
|---|---|---|---|---|
| Seattle MSA | 15.3 | $278.66 | $353.92 | 78.74% |
| Other WA and Other States | 3.6 | $62.58 | $66.93 | 93.50% |
| **Grand Total** | 18.9 | $341.24 | $420.85 | 81.08% |

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

**Table 14. BSAI Amendment 80 Catcher/Processor and All Catcher/Processor First Wholesale Gross Revenue Diversification by Community of Vessel Historic Ownership Address, 2008-2018 (millions of 2018 real dollars)**

| Geography | Annual Average Number of BSAI Amendment 80 Trawl CPs 2010-2018 | Annual Average Number of All Commercial Fishing CPs in those Same Communities (the "Community CP Fleet") 2010-2018 | All Commercial Fishing CPs Annual Average First Wholesale Gross Revenues from Amendment 80 BSAI Trawl-Caught Groundfish Only 2010-2018 ($ millions) | All Commercial Fishing CPs Annual Average Total First Wholesale Gross Revenues from All Area, Gear, and Species Fisheries 2010-2018 ($ millions) | All Commercial Fishing Amendment 80 CPs BSAI Trawl-Caught Groundfish First Wholesale Gross Revenue as a Percentage of Total Wholesale Gross Revenue Annual Average 2010-2018 |
|---|---|---|---|---|---|
| Seattle MSA | 15.3 | 46.8 | $278.15 | $1,123.61 | 24.76% |
| Other WA and Other States | 3.6 | 7.6 | $62.58 | $64.31 | 97.31% |
| **Grand Total** | 18.9 | 54.4 | $340.73 | $1,187.91 | 28.68% |

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

## 5.3 BSAI Groundfish Hook-and-Line Catcher Vessels

The following tables provide a series of quantitative indicators of sector engagement in and dependency on the BSAI groundfish fishery, by community and/or regional geography depending on data confidentiality restrictions, for BSAI groundfish hook-and-line catcher vessels, by community of ownership address, as noted in the following paragraphs. For Alaska communities, overall community of ownership address catcher vessel fleet dependency is also shown to the extent possible within data confidentiality restrictions.

Table 15 provides a count, by ownership community and year (2010-2018), of BSAI groundfish hook-and-line catcher vessels for all Alaska communities; the Seattle MSA and other Washington communities; state totals for Alaska and Washington; and a total for Oregon and all states other than Alaska, Washington, and Oregon combined, along with annual average counts and percentages and total unique vessel counts. As shown, the largest components of fleet ownership during 2010-2018 were in Homer, Alaska and the Seattle MSA, which on an average annual basis accounted for about 27 and 28 percent of the active fleet, respectively. The only communities that had an annual average of at least one vessel with a local ownership address active in the fishery over this time span were Homer (5.2 vessels), Unalaska/Dutch Harbor (2.3 vessels), Sitka (1.2 vessels), and the Seattle MSA (5.4 vessels). In general, Alaska community of vessel ownership address participation patterns are different that was seen in the BSAI groundfish TLAS catcher vessel sector, with more Alaska communities participating (14 communities[27] total with at least one vessel with a local ownership address in at least one year were represented in the 2010-2018 data) and Alaska ownership address annual average vessel participation (12.4 vessels) was stronger than Washington ownership address annual average vessel participation (5.8 vessels) or Oregon and Other States ownership address annual average vessel participation (0.9 vessels).

Table 16 provides BSAI groundfish hook-and line catcher vessel ex-vessel gross revenue information by ownership address community and year (2010-2018) to the extent possible within data confidentiality restrictions, along with annual averages in terms of dollars and percentages. As shown, vessels with Alaska ownership addresses account for about 36 percent of annual average ex-vessel revenues in this sector, with more than half of the Alaska community associated revenues accruing to vessels with Homer ownership addresses and more than a quarter of the Alaska community associated revenues accruing to vessels with Unalaska/Dutch Harbor ownership addresses.

Table 17 provides information on BSAI groundfish hook-and-line catcher vessel dependency on BSAI groundfish compared to all other areas, species, and gear types fished by those same vessels. As shown, dependency on BSAI groundfish, as measured in percentage of total ex-vessel revenues, was between roughly 20 and 25 percent for Homer, Unalaska/Dutch Harbor, and relevant communities in Washington, Oregon, and all other states vessels combined. On the other hand, dependency for Sitka and all other Alaska communities outside of Homer, Unalaska, and Sitka was about two percent and six percent, respectively, and for all geographies (i.e., the entire sector) combined was about 14 percent.

Table 18 provides information on community catcher vessel fleet (all commercial fishing catcher vessels with ownership addresses in the community, not just vessels that participate in the BSAI groundfish hook-and-line fishery) dependency on BSAI hook-and-line caught groundfish compared to all other areas, gear types, and species fished by all commercial fishing vessels with ownership addresses in that same

[27] A total of 16 different Alaska community names are shown in the dataset as having at least one local resident-owned vessel participating in hook-and-line BSAI groundfish fisheries in at least one year over the period 2010-2018 (although two communities reported separately in the dataset are actually part of the same municipality [i.e., Unalaska and Dutch Harbor, while having separate post offices/mailing addresses/zip codes, are both part of the City of Unalaska; Douglas is a part of the City & Borough of Juneau]. For the sake of clarity in reporting community-level impacts, communities that are part of the same city-level (or aggregated city/borough-level) municipality have been combined in the tables and text of this analysis).

community to the extent possible given data confidentiality restrictions. As shown, BSAI hook-and-line caught groundfish accounted for less than one percent of the total ex-vessel gross revenues of the for the "community fleets" of all geographies shown, except for Unalaska/Dutch Harbor when they accounted for roughly six percent of total ex-vessel gross revenues of the entire "community catcher vessel fleet."

**Table 15. Individual BSAI Groundfish Hook-and-Line Catcher Vessels by Community of Vessel Historic Ownership Address, 2010-2018 (number of vessels)**

| Geography | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 (number) | Annual Average 2010-2018 (percent) | Total Unique CVs 2010-2018 (number) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adak | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.58% | 1 |
| Anchor Point | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.58% | 2 |
| Cordova | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0.1 | 0.58% | 1 |
| Delta Junction | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0.4 | 2.33% | 1 |
| Homer | 7 | 7 | 8 | 6 | 3 | 4 | 5 | 4 | 3 | 5.2 | 27.33% | 15 |
| Juneau/Douglas | 2 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0.7 | 3.49% | 4 |
| Kodiak | 5 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0.8 | 4.07% | 6 |
| Mekoryuk | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.58% | 1 |
| Nikolaevsk | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 1.16% | 1 |
| Port Lions | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.58% | 1 |
| Seward | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0.3 | 1.74% | 2 |
| Sitka | 3 | 5 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1.2 | 6.40% | 7 |
| Unalaska/Dutch Harbor | 3 | 3 | 5 | 3 | 3 | 3 | 0 | 0 | 1 | 2.3 | 12.21% | 5 |
| Wasilla | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0.7 | 3.49% | 2 |
| Alaska Total | 22 | 20 | 19 | 15 | 9 | 10 | 7 | 6 | 4 | 12.4 | 65.12% | 48 |
| Addy | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.58% | 1 |
| Deer Park | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 0.58% | 1 |
| Elma | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.58% | 1 |
| Seattle MSA | 4 | 9 | 6 | 7 | 7 | 5 | 3 | 4 | 4 | 5.4 | 28.49% | 9 |
| Washington Total | 5 | 10 | 6 | 7 | 7 | 5 | 3 | 4 | 5 | 5.8 | 30.23% | 12 |
| Oregon and Other States** | 1 | 1 | 0 | 1 | 1 | 1 | 2 | 0 | 1 | 0.9 | 4.65% | 5 |
| **Grand Total** | **28** | **31** | **25** | **23** | **17** | **16** | **12** | **10** | **10** | **19.1** | **100.00%** | **60** |

*Seattle MSA includes all communities in King, Pierce, and Snohomish counties (Edmonds, Everett, Gig Harbor, Mukilteo, Puyallup, Shoreline, and Seattle are represented as active in the 2010-2018 data).

**Includes Warrenton, Oregon (2010-2011), New Hampshire (2013), and California (2014-2016, 2018).

Note: Due to CV ownerhship movement between communities over the years shown, total unique CVs per community may not sum to state or grand totals.

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

**Table 16. BSAI Groundfish Hook-and-Line Catcher Vessels Ex-Vessel Gross Revenues by Community of Vessel Historic Ownership Address, 2010-2018 (millions of 2018 real dollars)**

| Geography | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 ($ millions) | Annual Average 2010-2018 (percent) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Homer | $1.01 | $0.89 | $0.96 | $0.55 | $0.38 | $0.37 | $0.18 | * | * | $0.62 | 19.93% |
| Sitka | $0.17 | $0.22 | * | * | * | $0.00 | $0.00 | $0.00 | $0.00 | $0.06 | 2.07% |
| Unalaska/Dutch Harbor | $0.19 | $0.27 | * | $0.56 | $0.97 | $0.14 | $0.00 | $0.00 | * | $0.30 | 9.78% |
| Other Alaska | $0.34 | $1.04 | * | * | * | $0.09 | $0.01 | * | $0.00 | $0.30 | 9.56% |
| Alaska Total | $1.71 | $2.42 | $1.76 | $1.47 | $1.53 | $0.59 | $0.19 | $0.15 | $0.15 | $1.11 | 35.69% |
| WA, OR, and Other States Total | $1.59 | $2.81 | $2.40 | $1.66 | $3.35 | $2.83 | $1.17 | $0.60 | $1.58 | $2.00 | 68.35% |
| **Grand Total** | **$3.30** | **$5.23** | **$4.16** | **$3.14** | **$4.88** | **$3.42** | **$1.36** | **$0.75** | **$1.73** | **$3.11** | **100.00%** |

*Denotes confidential data.

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

**Table 17 BSAI Groundfish Hook-and-Line Catcher Vessels Ex-Vessel Gross Revenue Diversification by Community of Vessel Historic Ownership Address, All Communities, 2010-2018 (millions of 2018 real dollars)**

| Geography | Annual Average Number of BSAI Groundfish H&L CVs 2010-2018 | BSAI Groundfish H&L CVs Annual Average Ex-Vessel Gross Revenues from BSAI H&L-Caught Groundfish Only 2010-2018 ($ millions) | BSAI Groundfish H&L CVs Annual Average Total Ex-Vessel Gross Revenues from All Area, Gear, and Species Fisheries 2010-2018 ($ millions) | BSAI Groundfish H&LCVs BSAI H&L-Caught Groundfish Ex-Vessel Value as a Percentage of Total Ex-Vessel Gross Revenue Annual Average 2010-2018 |
|---|---|---|---|---|
| Homer | 5.22 | $0.62 | $2.91 | 21.25% |
| Sitka | 1.22 | $0.06 | $2.80 | 2.29% |
| Unalaska/Dutch Harbor | 2.33 | $0.30 | $1.21 | 25.13% |
| Other Alaska | 6.00 | $0.30 | $4.64 | 6.41% |
| Alaska Total | 12.44 | $1.11 | $11.56 | 9.59% |
| WA, OR, and Other States Total | 6.56 | $2.00 | $9.98 | 20.02% |
| **Grand Total** | **19.11** | **$3.11** | **$21.54** | **14.43%** |

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

**Table 18. BSAI Groundfish Hook-and-Line Catcher Vessel and All Catcher Vessel Ex-Vessel Gross Revenue Diversification by Community of Vessel Historic Ownership Address, 2010-2018 (millions of 2018 real dollars)**

| Geography | Annual Average Number of BSAI Groundfish H&L CVs 2010-2018 | Annual Average Number of All Commercial Fishing CVs in those Same Communities (the "Community CV Fleet") 2010-2018 | All Commercial Fishing CVs Annual Average Ex-Vessel Gross Revenues from BSAI H&L-Caught Groundfish Only 2010-2018 ($ millions) | All Commercial Fishing CVs Annual Average Total Ex-Vessel Gross Revenues from All Areas, Gears, and Species Fisheries 2010-2018 ($ millions) | All Commercial Fishing CVs BSAI H&L-Caught Groundfish Ex-Vessel Gross Revenue as a Percentage of Total Ex-Vessel Gross Revenue Annual Average 2010-2018 |
|---|---|---|---|---|---|
| Homer | 5.22 | 383.77 | $0.62 | $92.85 | 0.67% |
| Sitka | 1.22 | 395.88 | $0.06 | $49.89 | 0.13% |
| Unalaska/Dutch Harbor | 2.33 | 16.10 | $0.30 | $4.85 | 6.26% |
| Other Alaska | 6.00 | 980.33 | $0.30 | $243.17 | 0.12% |
| Alaska Total | 12.44 | 1,776.08 | $1.11 | $386.02 | 0.29% |
| WA, OR, and Other States Total | 6.56 | 310.22 | $2.00 | $461.99 | 0.43% |
| **Grand Total** | **19.00** | **2,086.30** | **$3.11** | **$848.02** | **0.37%** |

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

## 5.4 BSAI Groundfish Hook-and-Line Catcher/Processors

The following series of tables provide a series of quantitative indicators of sector engagement in and dependency on the BSAI groundfish fishery, by community and/or regional geography of ownership address depending on data confidentiality restrictions, for BSAI groundfish hook-and-line catcher/processors, as noted in the following paragraphs. For Alaska communities, overall community catcher/processor fleet dependency is also shown to the extent possible within data confidentiality restrictions.

Table 19 provides a count, by community of ownership address and year (2010-2018), of BSAI groundfish hook-and-line catcher/processors for all Alaska communities; the Seattle MSA; other Washington communities; and Oregon communities, along with annual average counts and percentages and a count of unique vessels. As shown, the largest component of fleet ownership during any given year is, by far, the Seattle MSA (annually averaging about 60 percent of all participating vessels). Among Alaska communities, Petersburg has the highest annual average participation, but no vessels with Petersburg ownership addresses have participated in the fishery in the three most recent years for which data are available (2016-2018) and Anchorage is the only Alaska community with vessels with local ownership addresses participating in the fishery in each year shown. Seward, the only other Alaska community appearing in the data, has not had a vessel with a local ownership address participate in the fishery in the seven most recent years for which data are available.

Table 20 provides BSAI groundfish hook-and-line catcher/processor first wholesale gross revenue information by community of ownership address and year (2010-2018) to the extent possible within data confidentiality restrictions, along with annual averages in terms of dollars and percentages. This table clearly shows the concentration of the fleet first wholesale gross revenues in the Seattle MSA (annually averaging almost three-quarters of the sector total). All other Washington communities combined, and all Alaska and Oregon communities combined each accounted for about half of the remaining revenues.

Table 21 provides information on BSAI groundfish hook-and-line catcher/processor dependency on BSAI groundfish compared to all other areas, species, and gear types fished by those same vessels. As shown, dependency on BSAI groundfish, as measured in percentage of annual average 2010-2018 total first wholesale gross revenues, was about 75 percent for Seattle MSA ownership address vessels. Vessels with other Washington ownership addresses outside of the Seattle MSA and those with ownership addresses in Alaska and Oregon communities combined showed about 55 percent and 62 dependency, respectively, on the relevant fishery.

Table 22 provides information on Alaska community catcher/processor fleet (all commercial fishing catcher/processors in the community, not just vessels that participate in the BSAI groundfish fishery) dependency on BSAI hook-and-line caught groundfish compared to all other areas, gear types, and species fished by those catcher/processors with ownership addresses in that same community, as measured by percentage of first wholesale gross revenues, to the extent possible given data confidentiality restrictions. As shown, the Seattle MSA "catcher/processor community fleet" as a whole is less dependent on these revenues (about 12 percent dependency) compared to the "catcher/processor community fleets" of other Washington communities combined (about 55 percent dependency) and participating Alaska and Oregon communities combined (about two percent dependency) due, no doubt, to the much larger and more diversified catcher/processor fleet in the Seattle MSA.

**Table 19. Individual BSAI Groundfish Hook-and-Line Catcher/Processors by Community of Vessel Historic Ownership Address, 2010-2018 (number of vessels)**

| Geography | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 (number) | Annual Average 2010-2018 (percent) | Total Unique CPs 2010-2018 (number) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Anchorage | 2 | 2 | 3 | 4 | 3 | 2 | 2 | 2 | 2 | 2.44 | 7.67% | 5 |
| Petersburg | 5 | 5 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 2.89 | 9.06% | 6 |
| Seward | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.22 | 0.70% | 1 |
| Alaska Total | 8 | 8 | 7 | 8 | 7 | 6 | 2 | 2 | 2 | 5.56 | 17.42% | 12 |
| Elma | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.11 | 0.35% | 1 |
| Lynden | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 3.67 | 11.50% | 4 |
| Seattle MSA* | 26 | 23 | 23 | 21 | 19 | 20 | 25 | 22 | 19 | 22.00 | 59.58% | 34 |
| Washington Total | 30 | 26 | 26 | 25 | 23 | 24 | 29 | 26 | 23 | 25.78 | 80.84% | 40 |
| Bend Oregon | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0.56 | 1.74% | 1 |
| **Grand Total** | **38** | **34** | **33** | **33** | **31** | **31** | **32** | **29** | **26** | **31.89** | **100.00%** | **47** |

*Seattle MSA includes all communities in King, Pierce, and Snohomish counties (Bothell, Everett, Mill Creek, Seattle and Woodinville are represented as active in the 2010-2018 data).

Note: Due to CP ownerhship movement between communities over the years shown, total unique CPs per community or state may not sum to state or grand totals.

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

**Table 20. BSAI Groundfish Hook-and-Line Catcher/Processor First Wholesale Gross Revenues by Community of Vessel Historic Ownership Address, 2010-2018 (millions of 2018 real dollars)**

| Geography | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 ($ millions) | Annual Average 2010-2018 (percent) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Seattle MSA | $100.98 | $149.01 | $144.60 | $101.72 | $116.98 | $132.89 | $144.96 | $162.88 | $147.59 | $133.51 | 72.85% |
| Other Washington | $17.18 | $19.17 | $23.81 | $19.92 | $24.54 | $28.84 | $26.07 | $31.76 | $30.57 | $24.65 | 13.45% |
| Alaska and Oregon | $22.54 | $35.77 | $39.64 | $25.51 | $29.66 | $38.10 | $12.66 | $11.01 | $11.07 | $25.11 | 13.70% |
| **Grand Total** | **$140.70** | **$203.95** | **$208.04** | **$147.15** | **$171.18** | **$199.83** | **$183.69** | **$205.65** | **$189.23** | **$183.27** | **100.00%** |

*Denotes confidential data.

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

**Table 21. BSAI Hook-and-Line Catcher/Processor First Wholesale Gross Revenue Diversification by Community of Vessel Historic Ownership Address, 2010-2018 (millions of 2018 real dollars)**

| Geography | Annual Average Number of BSAI Groundfish H&L CPs 2010-2018 | BSAI Groundfish H&L CPs Annual Average First Wholesale Gross Revenues from BSAI H&L-Caught Groundfish Only 2010-2018 ($ millions) | BSAI Groundfish H&L CPs Annual Average Total Ex-Vessel Gross Revenues from All Area, Gear, and Species Fisheries 2010-2018 ($ millions) | BSAI H&L-Caught Groundfish First Wholesale Value as a Percentage of Total First Wholesale Gross Revenue Annual Average 2010-2018 |
|---|---|---|---|---|
| Seattle MSA | 22.00 | $133.51 | $178.98 | 74.60% |
| Other Washington | 3.78 | $24.65 | $44.58 | 55.29% |
| Alaska and Oregon | 6.11 | $25.11 | $40.70 | 61.68% |
| **Grand Total** | **31.89** | **$183.27** | **$264.26** | **69.35%** |

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

**Table 22. BSAI Groundfish Hook-and-Line Catcher/Processor and All Catcher/Processor Vessel First Wholesale Gross Revenue Diversification by Community of Vessel Historic Ownership Address, 2010-2018 (millions of 2018 real dollars)**

| Geography | Annual Average Number of BSAI Groundfish H&L CPs 2010-2018 | Annual Average Number of All Commercial Fishing CPs in those Same Communities (the "Community CP Fleet") 2010-2018 | All Commercial Fishing CPs Annual Average First Wholesale Gross Revenues from BSAI H&L-Caught Groundfish Only 2010-2018 ($ millions) | All Commercial Fishing CPs Annual Average Total Ex-Vessel Gross Revenues from All Area, Gear, and Species Fisheries 2010-2018 ($ millions) | All Commercial Fishing CPs BSAI H&L-Caught Groundfish Ex-Vessel Gross Revenue as a Percentage of Total Ex-Vessel Gross Revenue Annual Average 2010-2018 |
|---|---|---|---|---|---|
| Seattle MSA | 22.00 | 55.67 | $133.51 | $1,147.13 | 11.64% |
| Other Washington | 3.78 | 3.78 | $24.65 | $44.58 | 55.29% |
| Alaska and Oregon | 6.11 | 8.66 | $25.11 | $83.41 | 2.19% |
| **Grand Total** | **31.89** | **68.10** | **$158.62** | **$1,275.12** | **12.44%** |

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

## 5.5 Shore-Based Processors Operating in Alaska Accepting Relevant BSAI Groundfish Deliveries

The following tables provide a series of quantitative indicators of sector engagement in and dependency on deliveries from catcher vessels in the TLAS and/or hook-and line sectors of BSAI groundfish fishery and/or deliveries of CDQ groundfish by catcher vessels from any sector (not just the TLAS and/or hook-and-line sectors), by community and/or regional geography of operation depending on data confidentiality restrictions, for shore-based BSAI groundfish processors operating in Alaska, as noted in the following paragraphs. Overall community shore-based processor dependency on the relevant BSAI groundfish deliveries is also shown to the extent possible within data confidentiality restrictions.

Table 23 provides information on the distribution of shore-based processors in Alaska communities that accepted BSAI groundfish TLAS and/or hook-and-line deliveries[28] and/or deliveries of CDQ groundfish by catcher vessels from any sector (not just the TLAS and hook-and-line sectors) in the period 2010-2018. For the purposes of this analysis, shore-based BSAI groundfish processors are defined as those shore-based entities (as identified by F_ID [intent to operate] and SBPR [shore-based processor][29] codes in AKFIN data) accepting catcher (or catcher/processor) class vessel BSAI groundfish deliveries, excluding halibut and/or sablefish. As shown, a total of 18 Alaska communities were the location of BSAI groundfish shore-based processors that accepted relevant deliveries over this time period, but nine of those communities accepted those deliveries in only one of the nine years covered by the data.[30] Of the other nine communities, five (Adak, Akutan, King Cove, Nome, and Unalaska/Dutch Harbor) accepted deliveries every year, two (Adak and Atka) accepted deliveries in seven out of the nine years, and the remaining two (Sand Point and Kodiak) accepted deliveries in five and four out of the nine years, respectively.

Table 24 provides information on the ex-vessel gross value of BSAI groundfish deliveries by community and year (2010-2018) to the extent possible within data confidentiality restrictions. As shown, information on no individual community other than Unalaska/Dutch Harbor and Akutan combined can be disclosed for 2010-2018 and still provide the ability to disclose a sector total.[31] Unalaska/Dutch Harbor and Akutan combined accounted for over 80 percent of BSAI groundfish shore-based processor ex-vessel gross revenues on an average annual basis over the time period shown.

Table 25 provides information on average annual BSAI groundfish shore-based processor dependency on the relevant TLAS/hook-and-line/CDQ BSAI groundfish deliveries per se compared to all area, gear, and species fisheries landings processed by those same processors for the years 2010-2018. As shown, deliveries of relevant BSAI groundfish accounted for approximately eight percent of the combined ex-vessel value paid by Unalaska/Dutch Harbor and Akutan BSAI groundfish processors for all deliveries of all species over that period; for all other Alaska BSAI groundfish shore-based processors as a group, relevant BSAI groundfish deliveries account for less than two percent of total ex-vessel values paid on an average annual basis over the same period for those same processors.

[28] Excludes AFA and all state-managed groundfish deliveries.

[29] "SBPR" is used as an abbreviation for "shore-based processor(s)" in tables (only) in this SIA.

[30] Communities that accepted deliveries in a single year included St. Paul (2010); Chefornak, Kipnuk, Mekoryuk, Seward, Toksook Bay, and Wasilla (2013); False Pass (2015); and Twin Hills (2017). While in at least some cases total annual deliveries were in small amounts (e.g., less than $1,000 of Pacific cod) all of the landings came through in the data as federal groundfish (and were classified as groundfish target landings).

[31] Unalaska/Dutch Harbor could be shown by itself, but given the similarities between the large, multispecies plant in Akutan and those in Unalaska/Dutch Harbor, the decision was made to aggregate the two to show the large concentration of processing in those two communities compared to all other communities combined.

Table 26 provides information on average annual total shore-based processor dependency (all shore-based processors in the communities that had at least one BSAI groundfish processor, not just the shore-based processors that accepted relevant BSAI groundfish fishery deliveries) on the relevant BSAI groundfish deliveries compared to all area and species fishery landings processed by all processors for the years 2010-2018, within the constraints of confidentiality restrictions. As shown, for 2010-2018, relevant BSAI groundfish deliveries ex-vessel values accounted for about seven percent of all shore-based processor ex-vessel values paid for Unalaska/Dutch Harbor and Akutan combined, while relevant BSAI groundfish deliveries ex-vessel values accounted for less than one percent of all shore-based ex-vessel values paid for all processors combined in the remaining Alaska communities that had a least one shore-based processor accepting any relevant BSAI groundfish landings in any year during 2010-2018.

**Table 23. Shore-Based Processors in Alaska Accepting Relevant BSAI Groundfish Deliveries by Community of Operation, 2010-2018 (number of processors)**

| Geography | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 (number) | Annual Average 2010-2018 (percent) | Total Unique SBPRs* 2010-2018 (number) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adak | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0.8 | 6.67% | 5 |
| Akutan | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 8.57% | 1 |
| Anchorage | 1 | 2 | 2 | 3 | 2 | 1 | 1 | 1 | 1 | 1.6 | 13.33% | 3 |
| Atka | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0.8 | 6.67% | 1 |
| Chefornak | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.95% | 1 |
| False Pass | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0.1 | 0.95% | 1 |
| King Cove | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 8.57% | 1 |
| Kipnuk | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.95% | 1 |
| Kodiak | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 1 | 0 | 0.7 | 5.71% | 3 |
| Mekoryuk | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.95% | 1 |
| Nome | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 8.57% | 1 |
| Sand Point | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0.6 | 4.76% | 1 |
| Seward | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.95% | 1 |
| St Paul | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.95% | 1 |
| Toksook Bay | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.95% | 1 |
| Twin Hills | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0.1 | 0.95% | 1 |
| Unalaska | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 4 | 3.3 | 28.57% | 1 |
| Wasilla | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.95% | 1 |
| **Total** | **11** | **11** | **11** | **18** | **11** | **10** | **13** | **10** | **10** | **11.7** | **100.00%** | **26** |

*SBPR = shore-based processor

Note: For this table "groundfish deliveries" are defined as catcher vessel (or catcher/processor) class vessel deliveries, excluding halibut and sablefish, to shore-based processors (as identified by F_ID [intent to operate] and SBPR [shore-based processor] codes in AKFIN data).

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

**Table 24. Ex-Vessel Values Paid for Relevant BSAI Groundfish Deliveries to Shore-Based Processors in Alaska by Community of Operation, 2010-2018 (millions of 2018 real dollars)**

| Geography | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 ($ millions) | Annual Average 2010-2018 (percent) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Unalaska and Akutan | $19.13 | $24.49 | $29.73 | $21.25 | $24.27 | $18.53 | $18.84 | $21.35 | $25.73 | $22.59 | 82.82% |
| All Other Alaska | $0.83 | $3.46 | $6.25 | $5.79 | $4.73 | $2.05 | $2.68 | $3.20 | $13.15 | $4.68 | 17.18% |
| **Grand Total** | **$19.96** | **$27.95** | **$35.98** | **$27.04** | **$29.00** | **$20.58** | **$21.52** | **$24.55** | **$38.88** | **$27.27** | **100.00%** |

Note: For this table "groundfish deliveries" are defined as catcher vessel (or catcher/processor) class vessel deliveries, excluding halibut and sablefish, to shore-based processors (as identified by F_ID [intent to operate] and SBPR [shore-based processor] codes in AKFIN data).
Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

**Table 25. Shore-Based Processors in Alaska Accepting Relevant BSAI Groundfish Deliveries Ex-Vessel Values Paid Diversity by Community of Operation, 2010-2018 (millions of 2018 real dollars)**

| Geography | Annual Average Number of BSAI Groundfish SBPRs* 2010-2018 | BSAI Groundfish SBPRs Annual Average Ex-vessel Values Paid for BSAI Groundfish Only 2010-2018 ($ millions) | BSAI Groundfish SBPRs Annual Average Total Ex-vessel Values Paid for All Area, Gear, and Species Fisheries 2010-2018 ($ millions) | BSAI Groundfish SBPRs Ex-Vessel Values Paid for BSAI Groundfish as a Percentage of Total Ex-vessel Values Paid Annual Average 2010-2018 |
|---|---|---|---|---|
| Unalaska and Akutan | 4.33 | $22.59 | $285.93 | 7.90% |
| All Other Alaska | 7.33 | $4.68 | $281.73 | 1.66% |
| **Grand Total** | **11.67** | **$27.27** | **$567.66** | **4.80%** |

*SBPR = shore-based processor
Note: For this table "groundfish deliveries" are defined as catcher vessel (or catcher/processor) class vessel deliveries, excluding halibut and sablefish, to shore-based processors (as identified by F_ID [intent to operate] and SBPR [shore-based processor] codes in AKFIN data).
Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

**Table 26. All Areas and Species Ex-Vessel Values Paid Diversity by Community of Operation for All Shore-Based Processors (for Alaska communities with at least one Shore-Based Processor accepting relevant BSAI groundfish deliveries), 2010-2018 (millions of 2018 real dollars)**

| Geography | Annual Average Number of BSAI Groundfish SBPRs* 2010-2018 | Annual Average Number of All SBPRs in those Same Communities (the "Community SBPR Sector") 2010-2018 | All Community SBPRs Annual Average Ex-vessel Values Paid for BSAI Groundfish Only 2010-2018 ($ millions) | All Community SBPRs Annual Average Total Ex-vessel Values Paid from All Area, Gear, and Species Fisheries 2010-2018 ($ millions) | All Community SBPRs Annual Average BSAI Groundfish Ex-vessel Values Paid as a Percentage of Total Ex-Vessel Values Paid Annual Average 2010-2018 |
|---|---|---|---|---|---|
| Akutan and Unalaska/Dutch Harbor | 4.3 | 6.3 | $22.59 | $331.04 | 6.82% |
| All Other Alaska | 7.5 | 35.7 | $4.68 | $690.71 | 0.68% |
| **Grand Total** | **11.8** | **42.0** | **$27.27** | **$1,021.75** | **2.67%** |

*SBPR = shore-based processor

Note: For this table "groundfish deliveries" are defined as catcher vessel (or catcher/processor) class vessel deliveries, excluding halibut and sablefish, to shore-based processors (as identified by F_ID [intent to operate] and SBPR [shore-based processor] codes in AKFIN data)

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

## 5.6 Floating Processors Operating in Alaska Accepting Relevant BSAI Groundfish Deliveries

The following tables provide a series of quantitative indicators of sector engagement in and dependency on deliveries from catcher vessels in the TLAS and/or hook-and line sectors of BSAI groundfish fishery and/or deliveries of CDQ groundfish by catcher vessels from any sector (not just the TLAS and/or hook-and-line sectors), by community of ownership address depending on data confidentiality restrictions, for floating BSAI groundfish processors operating in Alaska, as noted in the following paragraphs. Overall community floating processor dependency on the relevant BSAI groundfish deliveries is also shown to the extent possible within data confidentiality restrictions. It is important to note that these data are being presented by community of ownership address rather than community of operation, based on a lack of adequate operation location data. When floating processors operate inside of city and/or borough boundaries, their contribution to community tax revenues are typically the same as shore-based processors.

Table 27 provides information on the distribution of ownership address of floating processors operating in Alaska that accepted BSAI groundfish TLAS and/or hook-and-line deliveries and/or deliveries of CDQ groundfish by catcher vessels from any sector (not just the TLAS and hook-and-line sectors) in the period 2010-2018. For the purposes of this analysis, shore-based BSAI groundfish processors are defined as those shore-based entities (as identified by F_ID [intent to operate] and FLPR [floating processor][32] codes in AKFIN data) accepting relevant catcher vessel (or catcher/processor) sector BSAI groundfish deliveries, excluding halibut and/or sablefish. As shown, ownership address location is predominately in the Seattle MSA (as all three Washington cities listed are within the Seattle MSA), although one floating processor is listed with an Anchorage ownership address in 2012 and 2018 and four are listed with an Unalaska/Dutch Harbor address in 2018.

Table 28 provides information on the ex-vessel gross value of relevant BSAI groundfish sector deliveries to floating processors by ownership address community and year (2010-2018) to the extent possible within data confidentiality restrictions. Given the size of the sector, either a sector total can be provided, or a Seattle MSA total can be provided, but not both, and even then not for all years.

Table 29 provides information on average annual BSAI groundfish floating processor dependency on the relevant TLAS/hook-and-line/CDQ BSAI groundfish deliveries per se compared to all area, gear, and species fisheries landings processed by those same processors for the years 2010-2018. As shown, the combined floating BSAI groundfish processors paid just over eight percent of their total ex-vessel value payments for the relevant BSAI groundfish deliveries alone over that period.

Table 30 provides information on average annual total floating processor dependency (all floating processors with ownership addresses in the communities that had at least one BSAI groundfish floating processor, not just the floating processors that accepted relevant BSAI groundfish fishery deliveries) on the relevant BSAI groundfish deliveries compared to all area and species fishery landings processed by all floating processors for the years 2010-2018. As shown, relevant BSAI groundfish deliveries ex-vessel values paid accounted for just under eight percent of all floating processor ex-vessel values paid in those communities over the 2010-2018 period.

[32] "FLPR" is used as an abbreviation for "floating processor(s)" in tables (only) in this SIA.

**Table 27. Floating Processors in Alaska Accepting Relevant BSAI Groundfish Deliveries by Community of Ownership, 2010-2018 (number of processors)**

| Geography | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 (number) | Annual Average 2010-2018 (percent) | Total Unique FLPRs* 2010-2018 (number) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Anchorage | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 3.45% | 1 |
| Dutch Harbor | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.4 | 6.90% | 4 |
| Kirkland | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 0.9 | 13.79% | 2 |
| Renton | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0.3 | 5.17% | 2 |
| Seattle | 3 | 5 | 5 | 2 | 3 | 4 | 5 | 5 | 9 | 4.6 | 70.69% | 13 |
| **Total** | **3** | **5** | **6** | **2** | **3** | **6** | **7** | **8** | **18** | **6.4** | **100.00%** | **22** |

*FLPR = floating processor

Note: For this table "groundfish deliveries" are defined as catcher vessel (or catcher/processor) class vessel deliveries, excluding halibut and sablefish, to floating processors (as identified by F_ID [intent to operate] and FLPR [floating processor] codes in AKFIN data).

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

**Table 28. Ex-Vessel Values Paid for Relevant BSAI Groundfish Deliveries to Floating Processors in Alaska, 2010-2018 (millions of 2018 real dollars)**

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 ($ millions) | Annual Average 2010-2018 (percent) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | * | $14.35 | $12.11 | * | $5.14 | $5.38 | $14.14 | $10.12 | $34.99 | $12.05 | 100.00% |

Note: For this table "groundfish deliveries" are defined as catcher vessel (or catcher/processor) class vessel deliveries, excluding halibut and sablefish, to floating processors (as identified by F_ID [intent to operate] and FLPR [floating processor] codes in AKFIN data).

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

**Table 29. Floating Processors in Alaska Accepting Relevant BSAI Groundfish Deliveries Ex-Vessel Values Paid Diversity, 2010-2018 (millions of 2018 real dollars)**

| | Annual Average Number of BSAI Groundfish FLPRs* 2010-2018 | BSAI Groundfish FLPRs Annual Average Ex-vessel Values Paid for BSAI Groundfish Only 2010-2018 ($ millions) | BSAI Groundfish FLPRs Annual Average Total Ex-vessel Values Paid for All Area, Gear, and Species Fisheries 2010-2018 ($ millions) | BSAI Groundfish FLPRs Ex-Vessel Values Paid for BSAI Groundfish as a Percentage of Total Ex-vessel Values Paid Annual Average 2010-2018 |
|---|---|---|---|---|
| **Total** | **6.44** | **$12.05** | **$148.22** | **8.13%** |

*FLPR = floating processor

Note: For this table "groundfish deliveries" are defined as catcher vessel (or catcher/processor) class vessel deliveries, excluding halibut and sablefish, to floating processors (as identified by F_ID [intent to operate] and FLPR [floating processor] codes in AKFIN data).

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

**Table 30. All Areas and Species Ex-Vessel Values Paid Diversity for All Floating Processors (for communities with at least one Floating Processor accepting relevant BSAI groundfish deliveries), 2010-2018 (millions of 2018 real dollars)**

| | Annual Average Number of BSAI Groundfish FLPRs* 2010-2018 | Annual Average Number of All FLPRs in those Same Communities (the "Community FLPR Sector") 2010-2018 | All Community FLPRs Annual Average Ex-vessel Values Paid for BSAI Groundfish Only 2010-2018 ($ millions) | All Community FLPRs Annual Average Total Ex-vessel Values Paid from All Area, Gear, and Species Fisheries 2010-2018 ($ millions) | All Community FLPRs Annual Average BSAI Groundfish Ex-vessel Values Paid as a Percentage of Total Ex-Vessel Values Paid Annual Average 2010-2018 |
|---|---|---|---|---|---|
| **Total** | **6.4** | **21.1** | **$12.05** | **$152.74** | **7.89%** |

*FLPR = floating processor

Note: For this table "groundfish deliveries" are defined as catcher vessel (or catcher/processor) class vessel deliveries, excluding halibut and sablefish, to floating processors (as identified by F_ID [intent to operate] and FLPR [floating processor] codes in AKFIN data).

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

## 5.7 BSAI Halibut Catcher Vessels

The following tables provide a series of quantitative indicators of sector engagement in and dependency on the BSAI halibut fishery, by community and/or regional geography depending on data confidentiality restrictions, for BSAI halibut catcher vessels with local ownership addresses, as noted in the following paragraphs. For Alaska communities, overall community catcher vessel fleet dependency is also shown to the extent possible within data confidentiality restrictions.

Table 31 provides a count, by community of ownership address and year (2010-2018), of BSAI halibut catcher vessels for all Alaska communities with annual average participation of 2.0 or more vessels for this time period, plus Adak; Table 32 provides similar information for the Seattle MSA; state totals for Alaska and Washington; and for Oregon and all other states combined, along with annual average counts and percentages. As shown, vessel ownership among states is heavily concentrated in Alaska, while within Alaska ownership is distributed across numerous communities. In addition to the 25 Alaska communities named in the table, four Alaska communities[33] saw an average of between one and 1.9 vessels, inclusive, participating annually; another 21 Alaska communities appear in the data as participating in fishery at least a minimal level sometime during this time span (i.e., from 0.1 to 0.9 vessels, inclusive, on an annual average basis). As discussed in Section 6, marked downward trends in catcher vessel participation are seen in recent years in multiple Alaska communities and regions, none more obvious than among the communities within the CVRF region.

Table 33 provides BSAI halibut catcher vessel ex-vessel gross revenue information by ownership address community and year (2010-2018) to the extent possible within data confidentiality restrictions, along with annual averages in terms of dollars and percentages. For Alaska, relatively high ex-vessel gross revenue communities (over $1 million) include Anchorage/Wasilla, Homer, Juneau/Douglas/Sitka,[34] and Kodiak, four communities or groups of communities located in the GOA region,[35] along with St. Paul and Unalaska in the BSAI region. This table clearly shows the concentration of the fleet ex-vessel values within Alaska compared to other states and within in the Seattle MSA for states outside of Alaska.

Table 34 provides information on BSAI halibut catcher vessel dependency on BSAI halibut compared to all other areas, gear types, and species fished by those same vessels, to the extent possible given confidentiality restrictions. As shown, dependency on BSAI halibut, as measured in percentage of total ex-vessel revenues, ranged widely across geographies, but dependency ranging between 80 and 100 percent is seen for halibut is seen in multiple communities across four Alaska regions.

Table 35 provides information on Alaska community catcher vessel fleet dependency on BSAI halibut compared to all other areas, gear types, and species fished by those vessels with ownership addresses in that same community to the extent possible given data confidentiality restrictions. (This table includes all commercial fishing catcher vessels, not just vessels that participate in the BSAI halibut fishery for those communities that had at least local ownership address BSAI halibut catcher vessel participating in any year 2010-2018.) As shown, community fleet dependency on BSAI halibut for four of the six highest BSAI halibut ex-vessel gross revenue producing Alaska communities of Anchorage/Wasilla, Homer, Juneau/Douglas/Sitka, and Kodiak ranges between 2.1 and 4.2 percent; for the other two relatively high-

[33] Chevak (CVRF region), Cordova and Seward (GOA region), and Delta Junction (Interior region).

[34] In addition to the Alaska communities noted in Section 4.3.2 as not having been determined as rural by the Federal Subsistence Board for the purposes of subsistence resource management (Anchorage and Homer), Juneau/Douglas and Wasilla have also been determined by the Board as being communities in non-rural areas.

[35] While among the top communities in terms of local ownership address total catcher vessel halibut ex-vessel gross revenues, BSAI halibut ex-vessel gross revenues account for less than five percent of total community fleet all area, species, and gear type fisheries ex-vessel gross revenues combined for each of these communities (and less than three percent in three of the four communities or groups of communities), as shown in Table 35.

producing Alaska communities of St. Paul and Unalaska, dependency of the overall local fleet was 99.8 percent and 35.8 percent, respectively. Among some communities with lower halibut harvest levels (and smaller community fleets), local fleet dependency on halibut was also high (e.g., Adak/Atka 80.4 percent, St. George 89.0 percent, and Savoonga 100 percent). The CVRF region communities represent a special case, with discontinuation of participation in the fishery partway through the 2010-2018 period, as discussed in Section 6.3.

**Table 31. Individual BSAI Halibut Catcher Vessels by Community of Vessel Historic Ownership Address, Alaska Communities, 2008-2018 (number of vessels)**

| Region | Community | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 (number) | Annual Average 2010-2018 (percent) | Unique Vessels 2010-2018 (number) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APICDA | Adak* | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0.6 | 0.3% | 3 |
| APICDA | Akutan | 4 | 3 | 5 | 3 | 4 | 3 | 3 | 1 | 1 | 3.0 | 1.6% | 6 |
| APICDA | Atka | 3 | 3 | 4 | 5 | 5 | 4 | 3 | 3 | 0 | 3.3 | 1.8% | 7 |
| APICDA | Saint George Island | 3 | 6 | 6 | 4 | 6 | 5 | 5 | 4 | 5 | 4.9 | 2.6% | 8 |
| APICDA | Unalaska/Dutch Harbor* | 10 | 9 | 9 | 8 | 6 | 7 | 7 | 5 | 8 | 7.7 | 4.1% | 16 |
| **APICDA** | **Regional Subtotal** | **21** | **22** | **25** | **21** | **21** | **20** | **18** | **13** | **14** | **19.4** | **10.5%** | **39** |
| **CBSFA** | **Saint Paul Island** | **18** | **18** | **17** | **16** | **16** | **13** | **12** | **14** | **14** | **15.3** | **8.2%** | **24** |
| CVRF | Chefornak | 23 | 21 | 8 | 20 | 2 | 0 | 0 | 0 | 0 | 8.2 | 4.4% | 34 |
| CVRF | Hooper Bay | 7 | 9 | 9 | 11 | 0 | 0 | 0 | 0 | 0 | 4.0 | 2.2% | 14 |
| CVRF | Kipnuk | 20 | 24 | 20 | 19 | 0 | 0 | 0 | 0 | 0 | 9.2 | 5.0% | 37 |
| CVRF | Mekoryuk | 28 | 29 | 24 | 24 | 12 | 0 | 0 | 0 | 0 | 13.0 | 7.0% | 34 |
| CVRF | Newtok | 8 | 8 | 8 | 10 | 1 | 0 | 0 | 0 | 0 | 3.9 | 2.1% | 17 |
| CVRF | Nightmute | 5 | 8 | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 2.9 | 1.6% | 10 |
| CVRF | Quinhagak | 2 | 8 | 9 | 16 | 0 | 0 | 0 | 0 | 0 | 3.9 | 2.1% | 18 |
| CVRF | Toksook Bay | 33 | 39 | 30 | 31 | 8 | 0 | 0 | 0 | 0 | 15.7 | 8.4% | 54 |
| CVRF | Tununak | 27 | 29 | 26 | 28 | 2 | 0 | 0 | 0 | 0 | 12.4 | 6.7% | 41 |
| CVRF | All Other CVRF Region | 5 | 6 | 9 | 15 | 0 | 0 | 0 | 0 | 0 | 3.9 | 2.1% | 21 |
| **CVRF** | **Regional Subtotal** | **158** | **181** | **150** | **178** | **27** | **0** | **0** | **0** | **0** | **77.1** | **41.5%** | **275** |
| NSEDC | Nome | 8 | 8 | 7 | 4 | 5 | 5 | 5 | 7 | 6 | 6.1 | 3.3% | 13 |
| NSEDC | Savoonga | 11 | 10 | 14 | 13 | 13 | 13 | 10 | 10 | 7 | 11.2 | 6.0% | 31 |
| NSEDC | All Other NSEDC Region | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0.3 | 0.2% | 3 |
| **NSEDC** | **Regional Subtotal** | **19** | **18** | **23** | **17** | **19** | **18** | **15** | **17** | **13** | **17.7** | **9.5%** | **47** |
| BBEDC | Dillingham | 0 | 1 | 2 | 3 | 2 | 2 | 2 | 3 | 4 | 2.1 | 1.1% | 10 |
| BBEDC | Togiak | 8 | 12 | 16 | 10 | 13 | 13 | 14 | 13 | 12 | 12.3 | 6.6% | 29 |
| BBEDC | All Other BBEDC Region | 2 | 0 | 3 | 1 | 0 | 1 | 3 | 5 | 4 | 2.1 | 1.1% | 11 |
| **BBEDC** | **Regional Subtotal** | **10** | **13** | **21** | **14** | **15** | **16** | **19** | **21** | **20** | **16.6** | **8.9%** | **49** |
| GOA | Anchorage | 2 | 2 | 3 | 2 | 1 | 3 | 2 | 2 | 2 | 2.1 | 1.1% | 6 |
| GOA | Homer | 12 | 14 | 15 | 13 | 11 | 11 | 12 | 15 | 15 | 13.1 | 7.1% | 28 |
| GOA | Juneau/Douglas | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 1 | 1 | 3.6 | 1.9% | 8 |
| GOA | Kodiak | 16 | 12 | 13 | 11 | 10 | 10 | 13 | 11 | 10 | 11.8 | 6.3% | 22 |
| GOA | Sitka | 7 | 8 | 5 | 2 | 2 | 3 | 3 | 3 | 3 | 4.0 | 2.2% | 9 |
| GOA | Wasilla | 1 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 1.1% | 4 |
| GOA | All Other GOA Region | 5 | 5 | 6 | 4 | 4 | 4 | 3 | 3 | 4 | 4.2 | 2.3% | 16 |
| **GOA** | **Regional Subtotal** | **48** | **49** | **49** | **38** | **34** | **37** | **39** | **37** | **37** | **40.9** | **22.0%** | **93** |
| **Interior** | **Regional Subtotal** | **2** | **2** | **1** | **1** | **2** | **2** | **2** | **2** | **2** | **1.8** | **1.0%** | **2** |
| **ALASKA** | **State Subtotal** | **276** | **303** | **286** | **285** | **134** | **106** | **105** | **104** | **100** | **188.8** | **100.0%** | **539** |

*Denotes communities within a CDQ region that are not themselves CDQ communities. Communities listed by name include those with an annual average of at least 2.0 vessels with local ownership addresses active in the fishery, plus Adak, which was identified by the community dependency exercise as a BSAI halibut dependent community based on a combination of factors.

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

**Table 32. Individual BSAI Halibut Catcher Vessels by Community of Vessel Historic Ownership Address, All Regions, 2008-2018 (number of vessels)**

| Region | Community* | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 (number) | Annual Average 2010-2018 (percent) | Unique Vessels 2010-2018 (number) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alaska | (see previous table) | 276 | 303 | 286 | 285 | 134 | 106 | 105 | 104 | 100 | 188.8 | 86.3% | 523 |
| | Seattle MSA | 25 | 25 | 22 | 24 | 19 | 20 | 21 | 18 | 18 | 21.3 | 9.0% | 35 |
| | Other Washington | 7 | 7 | 5 | 5 | 5 | 5 | 5 | 5 | 3 | 5.2 | 2.3% | 9 |
| Washington | State Subtotal | 32 | 32 | 27 | 29 | 24 | 25 | 26 | 23 | 21 | 26.6 | 11.3% | 41 |
| Oregon | State Subtotal | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 1.6 | 0.7% | 4 |
| Other States | Subtotal | 2 | 2 | 4 | 4 | 4 | 3 | 4 | 4 | 5 | 3.6 | 1.7% | 8 |
| **Grand Total** | | **313** | **340** | **319** | **320** | **163** | **135** | **136** | **132** | **126** | **220.4** | **100.0%** | **568** |

*The only community outside of Alaska with an annual average of at least 2.0 vessels with local ownership addresses active in the fishery is city of Seattle (averaging 14.0 active vessels per year). A total of 14 communities within the Seattle MSA and a total of nine other Washington communities were active in the fishery with at least one vessel in one year 2010-2018. A total of three Oregon communities appear in the data as well (Gold Beach, Waldport, and Warrenton). Other states at least minimally represented in the data include CA, CO, FL, and UT.

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

**Table 33. BSAI Halibut Catcher Vessels Ex-Vessel Gross Revenues by Community of Vessel Historic Ownership Address, 2010-2018 (thousands of 2018 real dollars)**

| Region | Community | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 (number) | Annual Average 2010-2018 (percent) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APICDA | AdakAtka** | $429 | $947 | $462 | $633 | $157 | $380 | $196 | $29 | $0 | $359 | 1.3% |
| APICDA | Akutan | $113 | $86 | $94 | $32 | $41 | $50 | $25 | * | * | $63 | 0.2% |
| APICDA | Saint George Island | $106 | $214 | $50 | $198 | $238 | $229 | $168 | * | * | $172 | 0.6% |
| APICDA | Unalaska/Dutch Harbor | $2,462 | $2,834 | $1,877 | $1,261 | $1,164 | $1,847 | $1,605 | $1,456 | $1,128 | $1,737 | 6.2% |
| CBSFA | Saint Paul Island | $3,426 | $4,527 | $3,300 | $2,249 | $2,015 | $1,712 | $1,662 | $1,881 | $1,484 | $2,473 | 8.9% |
| CVRF | Hooper Bay | $23 | $25 | $24 | $25 | $0 | $0 | $0 | $0 | $0 | $11 | 0.0% |
| CVRF | Kipnuk | $51 | $85 | $43 | $75 | $0 | $0 | $0 | $0 | $0 | $28 | 0.1% |
| CVRF | Mekoryuk | $453 | $618 | $299 | $301 | $59 | $0 | $0 | $0 | $0 | $192 | 0.7% |
| CVRF | Toksook Bay | $429 | $562 | $499 | $460 | $100 | $0 | $0 | $0 | $0 | $228 | 0.8% |
| CVRF | All Other CVRF | $256 | $433 | $233 | $346 | $56 | $0 | $0 | $0 | $0 | $147 | 0.5% |
| NSEDC | Savoonga | $227 | $157 | $345 | $151 | $193 | $53 | $132 | $146 | $176 | $176 | 0.6% |
| NSEDC | Nome & All Other NSEDC | $253 | $484 | $267 | $95 | $145 | $191 | $239 | $569 | $212 | $273 | 1.0% |
| BBEDC | Togiak | $106 | $213 | $193 | $146 | $124 | $165 | $223 | $270 | $152 | $177 | 0.6% |
| BBEDC | Dillingham & All Other BBEDC | $91 | $11 | $13 | $19 | $12 | $72 | $159 | $148 | $112 | $71 | 0.3% |
| GOA | Anchorage/Wasilla/Palmer** | $1,654 | $5,140 | $2,151 | $1,016 | $1,325 | $1,530 | $2,301 | $1,958 | $1,106 | $2,020 | 7.2% |
| GOA | Homer | $4,368 | $7,531 | $4,804 | $2,295 | $2,634 | $3,189 | $4,081 | $3,312 | $2,486 | $3,855 | 13.8% |
| GOA | Juneau/Douglas/Sitka** | $3,800 | $6,405 | $2,838 | $1,122 | $2,050 | $2,022 | $1,874 | $729 | $580 | $2,380 | 8.5% |
| GOA | Kodiak | $4,895 | $5,402 | $2,908 | $2,287 | $1,759 | $2,096 | $2,594 | $1,239 | $964 | $2,683 | 9.6% |
| Other GOA/Other AK | All Other GOA & All Other AK | $1,739 | $2,085 | $1,151 | $722 | $739 | $1,290 | $1,358 | $1,172 | $1,077 | $1,259 | 4.5% |
| Alaska | State Subtotal | **$24,880** | **$37,760** | **$21,550** | **$13,433** | **$12,809** | **$14,826** | **$16,618** | **$12,909** | **$9,476** | **$18,303** | **65.6%** |
| Washington | Seattle MSA | $9,252 | $12,470 | $8,514 | $4,696 | $4,166 | $5,635 | $6,162 | $5,512 | $3,051 | $6,607 | 23.7% |
| Washington | Other Washington | $2,771 | $4,080 | $2,032 | $1,403 | $1,327 | $1,435 | $1,540 | $1,266 | $724 | $1,842 | 6.6% |
| **Washington** | **State Subtotal** | **$12,024** | **$16,550** | **$10,547** | **$6,099** | **$5,493** | **$7,070** | **$7,702** | **$6,778** | **$3,775** | **$8,449** | 30.3% |
| **OR & Other States** | **Combined States Subtotal** | **$1,209** | **$1,763** | **$1,025** | **$918** | **$990** | **$949** | **$1,199** | **$1,083** | **$1,037** | **$1,130** | 4.1% |
| **Grand Total** | | **$38,113** | **$56,073** | **$33,122** | **$20,449** | **$19,292** | **$22,845** | **$25,519** | **$20,771** | **$14,288** | **$27,882** | **100.0%** |

*Denotes confidential data or data suppressed to preserve other data confidentiality/allow regional tallies..

** Communities combined to preserve data confidentiality.

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

**Table 34. BSAI Halibut Catcher Vessels Ex-Vessel Gross Revenue Diversification by Community of Vessel Historic Ownership Address, All Communities, 2010-2018 (thousands of 2018 real dollars)**

| Region | Community | Annual Average Number of BSAI Halibut CVs 2010-2018 | BSAI Halibut CVs Annual Average Ex-Vessel Gross Revenues from BSAI Halibut Only 2010-2018 ($ thousands) | BSAI Halibut CVs Annual Average Total Ex-Vessel Gross Revenues from All Area, Gear, and Species Fisheries 2010-2018 ($ thousands) | BSAI HalibutI CVs BSAI Halibut Ex-Vessel Value as a Percentage of Total Ex-Vessel Gross Revenue Annual Average 2010-2018 |
|---|---|---|---|---|---|
| APICDA | AdakAtka** | 3.9 | $359 | $447 | 80.4% |
| APICDA | Akutan | 3.0 | $63 | $166 | 38.1% |
| APICDA | Saint George Island | 4.9 | $172 | $193 | 89.0% |
| APICDA | Unalaska/Dutch Harbor | 7.7 | $1,737 | $3,112 | 55.8% |
| CBSFA | Saint Paul Island | 15.3 | $2,473 | $2,479 | 99.8% |
| CVRF | Hooper Bay | 4.0 | $11 | $11 | 99.8% |
| CVRF | Kipnuk | 9.2 | $28 | $29 | 97.6% |
| CVRF | Mekoryuk | 13.0 | $192 | $192 | 99.9% |
| CVRF | Toksook Bay | 15.7 | $228 | $230 | 98.8% |
| CVRF | All Other CVRF | 35.2 | $147 | $156 | 94.4% |
| NSEDC | Savoonga | 11.2 | $176 | $176 | 100.0% |
| NSEDC | Nome & All Other NSEDC | 6.4 | $273 | $1,129 | 24.2% |
| BBEDC | Togiak | 12.3 | $177 | $927 | 19.1% |
| BBEDC | Dillingham & All Other BBEDC | 4.2 | $71 | $230 | 30.7% |
| GOA | Anchorage/Wasilla/Palmer** | 4.4 | $2,020 | $6,603 | 30.6% |
| GOA | Homer | 13.1 | $3,855 | $10,976 | 35.1% |
| GOA | Juneau/Douglas/Sitka** | 7.6 | $2,380 | $5,654 | 42.1% |
| GOA | Kodiak | 11.8 | $2,683 | $17,230 | 15.6% |
| Other GOA/Other AK | All Other GOA & All Other AK | 6.0 | $1,259 | $3,447 | 36.5% |
| Alaska | State Subtotal | **188.9** | **$18,303** | **$53,387** | **34.3%** |
| Washington | Seattle MSA | 21.3 | $6,607 | $33,999 | 19.4% |
| Washington | Other Washington | 5.2 | $1,842 | $6,358 | 29.0% |
| Washington | State Subtotal | **26.5** | **$8,449** | **$40,357** | **20.9%** |
| Oregon & Other States | Combined States Subtotal | **5.1** | **$1,130** | **$6,993** | **16.2%** |
| **Grand Total** | | **220.5** | **$27,882** | **$100,737** | **27.7%** |

**Communities combined to preserve data confidentiality.

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

**Table 35. BSAI Halibut Catcher Vessel and All Catcher Vessel Ex-Vessel Gross Revenue Diversification by Community of Vessel Historic Ownership Address, 2008-2018 (thousands of 2018 real dollars)**

| Region | Community | Annual Average Number of BSAI Halibut CVs 2010-2018 | Annual Average Number of All Commercial Fishing CVs in those Same Communities (the "Community CV Fleet") 2010-2018 | All Commercial Fishing CVs Annual Average Ex-Vessel Gross Revenues from BSAI Halibut Only 2010-2018 ($ thousands) | All Commercial Fishing CVs Annual Average Total Ex-Vessel Gross Revenues from All Areas, Gears, and Species Fisheries 2010-2018 ($ thousands) | All Commercial Fishing CVs BSAI Halibut Ex-Vessel Gross Revenue as a Percentage of Total Ex-Vessel Gross Revenue Annual Average 2010-2018 |
|---|---|---|---|---|---|---|
| APICDA | AdakAtka** | 3.9 | 3.9 | $359 | $447 | 80.4% |
| APICDA | Akutan | 3.0 | 3.0 | $63 | $166 | 38.1% |
| APICDA | Saint George Island | 4.9 | 4.9 | $172 | $193 | 89.0% |
| APICDA | Unalaska/Dutch Harbor | 7.7 | 16.1 | $1,737 | $4,855 | 35.8% |
| CBSFA | Saint Paul Island | 15.3 | 7.3 | $2,473 | $2,479 | 99.8% |
| CVRF | Hooper Bay | 4.0 | 4.2 | $11 | * | * |
| CVRF | Kipnuk | 9.2 | 14.8 | $28 | $279 | 10.1% |
| CVRF | Mekoryuk | 13.0 | 13.3 | $192 | $223 | 86.1% |
| CVRF | Toksook Bay | 15.7 | 23.8 | $228 | $799 | 28.5% |
| CVRF | All Other CVRF | 35.2 | 62.1 | $147 | $1,076 | 13.7% |
| NSEDC | Savoonga | 11.2 | 11.2 | $176 | $176 | 100.0% |
| NSEDC | Nome & All Other NSEDC | 6.4 | 30.5 | $273 | $2,200 | 12.4% |
| BBEDC | Togiak | 12.3 | 60.1 | $177 | $2,480 | 7.1% |
| BBEDC | Dillingham & All Other BBEDC | 4.2 | 182.0 | $71 | $15,284 | 0.5% |
| GOA | Anchorage/Wasilla/Palmer** | 4.4 | 333.4 | $2,020 | $88,175 | 2.3% |
| GOA | Homer | 13.1 | 383.7 | $3,855 | $92,855 | 4.2% |
| GOA | Juneau/Douglas/Sitka** | 7.6 | 607.0 | $2,380 | $83,035 | 2.9% |
| GOA | Kodiak | 11.8 | 255.2 | $2,683 | $129,128 | 2.1% |
| Other GOA/Other AK | All Other GOA & All Other AK | 6.0 | 310.0 | $1,259 | $24,561 | 5.1% |
| Alaska | State Subtotal | **188.9** | **2,326.5** | **$18,303** | **$448,408** | **4.1%** |
| Washington | Seattle MSA | 21.3 | 404.8 | $6,607 | $494,529 | 1.3% |
| Washington | Other Washington | 5.2 | 166.2 | $1,842 | $38,402 | 4.8% |
| Washington | State Subtotal | **26.5** | **571.0** | **$8,449** | **$532,931** | **1.6%** |
| Oregon & Other States | Combined States Subtotal | **5.1** | **372.4** | **$1,130** | **$65,472** | **1.7%** |
| **Grand Total** | | **220.5** | **3,269.9** | **$27,882** | **$1,046,811** | **2.7%** |

**Communities combined to preserve data confidentiality.

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

## 5.8 Shore-Based Processors in Alaska Accepting BSAI Halibut Deliveries

The following tables provide a series of quantitative indicators of sector engagement in and dependency on the BSAI halibut fishery, by community and/or regional geography depending on data confidentiality restrictions, for shore-based BSAI halibut processors operating in Alaska, as noted in the following paragraphs. Overall community shore-based processor dependency is also shown to the extent possible within data confidentiality restrictions.

Table 36 provides information on the distribution of shore-based processors in Alaska communities that accepted BSAI halibut deliveries in the period 2010-2018. For the purposes of this analysis, shore-based BSAI halibut processors are defined as those shore-based entities (as identified by F_ID [intent to operate] and SBPR [shore-based processor][36] codes in AKFIN data) accepting BSAI halibut deliveries. As shown, 22 Alaska communities were the locations of BSAI halibut shore-based processing over this time period, but seven of those communities processed BSAI halibut in in less than half of the years covered by the data. BSAI halibut was processed every year in 13 communities (Adak, Akutan, and Unalaska/Dutch Harbor; St. Paul; Nome and Savoonga; Twin Hills; and Anchorage, Homer, King Cove, Kodiak Sand Point, and Seward). In two communities (Atka and False Pass), BSAI halibut processing took place in eight out of the nine years covered by the data. Of the seven remaining communities, all of which processed during less than half of the years covered by the data, six were in the CVRF communities (each of which processed annually 2010-2013, but none of which processed 2014-2018) and one (Togiak) was in the BBEDC region (which processed in each of the most recent three years covered by the data).

Table 37 provides information on the ex-vessel values associated with BSAI halibut deliveries to shore-based processors by community and year (2010-2018) to the extent possible within data confidentiality restrictions. As shown, no individual community data can be disclosed, but deliveries of BSAI halibut to processors in the BSAI APICDA and CBSFA regions combined accounted for about 82 percent of all ex-vessel values associated with BSAI halibut deliveries to all geographies combined during this time period. GOA communities accounted for about another 14 percent, while NSEDC and BBEDC communities together accounted for about three percent, with the remaining two percent attributable to CVRF communities.

Table 38 provides information on average annual BSAI halibut shore-based processor dependency on BSAI halibut compared to all area and species fisheries landings processed by those same processors for the years 2010-2018, as measured in percentage of ex-vessel values associated with deliveries made to the processors. As shown, of the deliveries made to the combined Akutan and Unalaska/Dutch Harbor BSAI halibut processors, approximately five percent of all ex-vessel values of landings of all species were associated with BSAI halibut deliveries over that period, while for the other BSAI Aleutian/Pribilof (APICDA/CBSFA) BSAI halibut processors that figure was approximately 16 percent. For the relevant NSEDC and BBEDC region processors combined and for the relevant GOA processors combined dependency was about seven and one percent, respectively), but dependency was virtually absolute (over 99 percent) for the relevant CVRF region processors.

Table 39 provides information on average annual total shore-based processor dependency (all shore-based processors in the communities that had at least one BSAI halibut processor, not just the shore-based processors that participated in the BSAI halibut fishery themselves) on BSAI halibut compared to all area and species fishery landings processed by all processors for the years 2010-2018, within the constraints of

[36] "SBPR" is used as an abbreviation for "shore-based processor(s)" in tables (only) in this SIA.

confidentiality restrictions, as measured by ex-vessel values associated with those landings. As shown, for that span of years, BSAI ex-vessel value of landings accounted for about four percent of all shore-based processor ex-vessel value of landings for Akutan and Unalaska/Dutch Harbor combined, while for the other BSAI Aleutian/Pribilof (APICDA/CBSFA) communities that figure was approximately 16 percent. For all processors combined in relevant NNEDC and BBEDC communities and for the combined processing sectors in the relevant GOA communities dependency on BSAI halibut was relatively modest as measured by proportion of total ex-vessel values of deliveries (about seven and one percent, respectively), but dependency was again virtually absolute (over 99 percent) for the all combined processors in the relevant CVRF region communities that had a least one shore-based processor accepting any BSAI halibut landings that year.

**Table 36. Shore-Based Processors in Alaska Accepting BSAI Halibut Deliveries by Community of Operation, 2010-2018 (number of processors)**

| Region | Community | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 (number) | Annual Average 2010-2018 (percent) | Total Unique SBPRs* 2008-2018 (number) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APICDA | Adak | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 1.6 | 5.81% | 3 |
| APICDA | Akutan | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 3.73% | 1 |
| APICDA | Atka | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0.9 | 3.32% | 1 |
| APICDA | False Pass | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0.9 | 3.32% | 1 |
| APICDA | Unalaska/Dutch Harbor | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2.3 | 8.71% | 3 |
| CBSFA | St Paul/St Paul Island | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.2 | 4.56% | 1 |
| CVRF | Chefornak | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0.4 | 1.66% | 1 |
| CVRF | Hooper Bay | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0.4 | 1.66% | 1 |
| CVRF | Kipnuk | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0.4 | 1.66% | 1 |
| CVRF | Mekoryuk | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0.4 | 1.66% | 1 |
| CVRF | Toksook Bay | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0.4 | 1.66% | 1 |
| CVRF | Tununak | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0.4 | 1.66% | 1 |
| NSEDA | Nome | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 3.73% | 1 |
| NSEDA | Savoonga | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 3.73% | 1 |
| BBEDC | Togiak | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0.3 | 1.24% | 1 |
| BBEDC | Twin Hills | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 3.73% | 1 |
| GOA | Anchorage | 2 | 3 | 4 | 4 | 3 | 2 | 1 | 1 | 1 | 2.3 | 8.71% | 4 |
| GOA | Homer | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1.9 | 7.05% | 3 |
| GOA | King Cove | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1.2 | 4.56% | 2 |
| GOA | Kodiak | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4.4 | 16.60% | 5 |
| GOA | Sand Point | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 3.73% | 1 |
| GOA | Seward | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.0 | 7.47% | 2 |
| **All** | **Grand Total** | **30** | **32** | **32** | **32** | **25** | **23** | **23** | **24** | **20** | **26.8** | **100.00%** | **37** |

*SBPR = shore-based processor.

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

**Table 37. Ex-Vessel Values of BSAI Halibut Deliveries to Shore-Based Processors in Alaska by Community of Operation, 2010-2018 (millions of 2018 real dollars)**

| Region | Community(ies) | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 ($ millions) | Annual Average 2010-2018 (percent) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APICDA | Akutan/Unalaska/Dutch Harbor | $19.38 | $26.96 | $14.08 | $9.16 | $9.93 | $11.84 | $13.66 | $10.82 | $6.63 | $13.61 | 54.8% |
| APICDA/CBSFA | Adak/Atka/False Pass/St. Paul | $10.99 | $17.98 | $8.47 | $3.98 | $3.41 | $4.46 | $3.85 | $3.15 | $3.53 | $6.65 | 26.8% |
| CVRF | Chefornak/Kipnuk/Toksook Bay | $.80 | $.27 | $.82 | $1.03 | $.00 | $.00 | $.00 | $.00 | $.00 | $.32 | 1.3% |
| CVRF | Hooper Bay/Mekoryuk/Tununak | $.41 | $.52 | $.26 | $.18 | $.00 | $.00 | $.00 | $.00 | $.00 | $.15 | 0.6% |
| NSEDA/BBEDC | Nome/Savoonga/Togiak/Twin Hills | $.75 | $.79 | $.72 | $.34 | $.43 | $.35 | $.63 | $1.00 | $.54 | $.62 | 2.5% |
| GOA | Anchorage/Homer/King Cove/Kodiak/Sand Point/Seward | $3.93 | $6.86 | $4.29 | $2.86 | $2.69 | $3.25 | $3.71 | $2.00 | $1.87 | $3.50 | 14.1% |
| | **Grand Total** | **$36.26** | **$53.37** | **$28.64** | **$17.55** | **$16.46** | **$19.90** | **$21.84** | **$16.97** | **$12.57** | **$24.84** | **100.0%** |

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

**Table 38. Shore-Based Processors in Alaska Accepting BSAI Halibut Deliveries Ex-Vessel Values Diversity by Community of Operation, 2008-2018 (millions of 2018 real dollars)**

| Region | Community(ies) | Annual Average Number of BSAI Halibut SBPRs* 2010-2018 | BSAI Halibut SBPRs Annual Average Ex-vessel Values Paid for BSAI Halibut Only 2010-2018 ($ millions) | BSAI Halibut SBPRs Annual Average Total Ex-vessel Values Paid for All Area, Gear, and Species Fisheries 2010-2018 ($ millions) | BSAI Halibut SBPRs Ex-Vessel Values Paid for BSAI Groundfish as a Percentage of Total Ex-vessel Values Paid Annual Average 2010-2018 |
|---|---|---|---|---|---|
| APICDA | Akutan/Unalaska/Dutch Harbor | 3.3 | $13.61 | $248.31 | 5.48% |
| APICDA/CBSFA | Adak/Atka/False Pass/St. Paul | 4.6 | $6.65 | $40.45 | 16.43% |
| CVRF | Chefornak/Kipnuk/Toksook Bay | 1.3 | $.32 | $.32 | 99.87% |
| CVRF | Hooper Bay/Mekoryuk/Tununak | 1.3 | $.15 | $.15 | 99.98% |
| NSEDA/BBEDC | Nome/Savoonga/Togiak/Twin Hills | 4.0 | $.62 | $8.35 | 7.39% |
| GOA | Anchorage/Homer/King Cove/Kodiak/Sand Point/Seward | 12.9 | $3.50 | $310.46 | 1.13% |
| | **Grand Total** | **27.5** | **$24.84** | **$608.05** | **4.09%** |

*SBPR = shore-based processor.

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

**Table 39. All Areas and Species Ex-Vessel Values Diversity by Community of Operation for All Shore-Based Processors (for Alaska communities with at least one Shore-Based Processor accepting BSAI halibut deliveries), 2008-2018 (millions of 2018 real dollars)**

| Region | Community(ies) | Annual Average Number of BSAI Groundfish SBPRs* 2010-2018 | Annual Average Number of All SBPRs in those Same Communities (the "Community SBPR Sector") 2010-2018 | All Community SBPRs Annual Average Ex-vessel Values Paid for BSAI Halibut Only 2010-2018 ($ millions) | All Community SBPRs Annual Average Total Ex-vessel Values Paid from All Area, Gear, and Species Fisheries 2010-2018 ($ millions) | All Community SBPRs Annual Average BSAI Halibut Ex-vessel Values Paid as a Percentage of Total Ex-Vessel Values Paid Annual Average 2010-2018 |
|---|---|---|---|---|---|---|
| APICDA | Akutan/Unalaska/Dutch Harbor | 3.3 | 6.3 | $13.61 | $331.04 | 4.11% |
| APICDA/CBSFA | Adak/Atka/False Pass/St. Paul | 4.6 | 4.6 | $6.65 | $40.45 | 16.43% |
| CVRF | Chefornak/Kipnuk/Toksook Bay | 1.3 | 1.3 | $.32 | $.32 | 99.87% |
| CVRF | Hooper Bay/Mekoryuk/Tununak | 1.3 | 1.3 | $.15 | $.15 | 99.98% |
| NSEDA/BBEDC | Nome/Savoonga/Togiak/Twin Hills | 4.0 | 4.0 | $.62 | $8.35 | 7.39% |
| GOA | Anchorage/Homer/King Cove/Kodiak/Sand Point/Seward | 12.9 | 33.9 | $3.50 | $359.34 | 0.97% |
| | **Grand Total** | **27.5** | **51.4** | **$24.84** | **$739.66** | **3.36%** |

*SBPR = shore-based processor.
Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

# 5.9 Subsistence Halibut Harvest

## 5.9.1 Overview

The harvest and processing of wild resources for food, raw materials, and other traditional uses have been a central part of the customs and traditions of many cultural groups in Alaska, including Aleut, Athabascan, Alutiiq, Euro-American, Haida, Inupiat, Tlingit, Tsimshian, and Yupik for centuries. The Alaska legislature passed the state's first subsistence statute in 1978 and established subsistence as the priority use of Alaska's fish and wildlife. The law defined subsistence as "customary and traditional uses" of fish and wildlife and highlighted the unique importance of wild resources, and the continuing role of subsistence activities in sustaining the long-established ways of life in Alaska. Subsistence uses of fish and land mammals are given a priority over commercial and recreational fishing and hunting in state and federal law, meaning that when the harvestable portion of a fish stock or game population is not sufficient for all public uses, regulation requires that subsistence uses are the last to be restricted.

In a subsistence update published in 2014, the ADFG ranked wild resources according to usable weight of subsistence harvest.[37] Fish species accounted for 53 percent of usable weight, followed by land mammals (22 percent), marine mammals (14 percent), plants (4 percent), birds (3 percent), and shellfish (3 percent). Salmon species alone accounted for 32 percent of total usable weight, and non-salmon species – including halibut – accounted for 21 percent of usable weight. Excluding plants, total subsistence harvest accounted for 33.8 million pounds per year in the 2014 study, representing only 0.9 percent of the fish and game harvested annually in Alaska. By comparison, the study found that commercial fishing accounted for 98.5 percent of total fish and game harvest by usable weight.

Halibut have been harvested for centuries by the indigenous coastal peoples of the lands bordering the eastern north Pacific Ocean, including Southeast, Southcentral, and Western Alaska. Early fishing was conducted by hook and line from large canoes, which could venture as far as 20 miles from shore (32 km). Hooks were carved from wood or bone to include spirit figures to attract halibut and were selective for large fish suitable for drying and smoking. Lines of up to sixty fathoms in length were made of twisted fibers of cedar, animal sinew, or kelp.

## 5.9.2 Subsistence Management

The management of subsistence halibut fisheries in Alaska is the responsibility of NMFS[38], but data collection and harvest estimation are performed by the ADFG Division of Subsistence Fisheries under contract to NMFS. Participation and harvest information are collected through a mailed survey and site-visit interview process for which data are available from 2003. The survey was funded annually until 2012. Due to funding constraints, the survey and estimation work has occurred biennially since then, covering 2014, 2016, and 2018. The most recent available survey results pertain to the 2016 fishing year and were published in December 2018. Estimates for the 2018 fishing year will be available in January 2020. The estimates reported in this document rely on the 2016 survey results that are published in ADFG

[37] http://www.adfg.alaska.gov/static/home/subsistence/pdfs/subsistence_update_2014.pdf

[38] A broader history of Federal subsistence management is available at the U.S. Department of Interior Office of Subsistence Management (OSM) website: https://www.doi.gov/subsistence/library/history.

Technical Paper 436 (Fall and Koster, 2018), which includes extensive documentation of survey methodology.

Despite a long history of harvest, federal halibut fishing regulations did not officially recognize and authorize the subsistence fishery until 2003. Regulations were pursuant to action taken by the Council in October 2000 to adopt a subsistence halibut program recognizing the Alaska subsistence fishery. In May 2003 NMFS published final regulations for a subsistence halibut fishery in Alaska.[39] In order to fish for subsistence halibut, an individual must reside in an eligible community, be a member of an eligible recognized tribe, or be a resident of a designated rural community.[40] Regulations recognize the residents of 118 rural communities and designated rural areas as well as members of 123 Organized Tribal Entities (tribes) as eligible to participate in subsistence halibut fishing. The tribes listed in regulation are those with customary and traditional uses of halibut. Individuals who are eligible through their tribal membership are not required to live in an eligible community or rural area to participate in the fishery. Special permits for community harvest, ceremonial, and educational purposes are also available to qualified Alaska communities and tribes. Eligible participants must register by obtaining a Subsistence Halibut Registration Certificate (SHARC) from NMFS RAM division.

Regulations list eligible communities by IPHC area and subarea. Within Area 4, 4A includes three communities (Akutan, Nikolski, and Unalaska); 4B includes two communities (Adak and Atka); 4C includes two communities (St. George and St. Paul); 4D includes three communities (Diomede, Gambell, and Savoonga); and 4E includes 54 communities (see §300.65(g)(1)).

Each year, ADFG issues a voluntary SHARC survey to certificate holders. The results of this survey are combined with data from some on-site visits to create the annual harvest estimate. However, the response rates for remote Alaskan villages have often been low. SHARC registrations have dropped in many remote communities. Community visits and in-person surveys (used to improve community-wide survey response rates) are generally focused on those communities and regions outside of the Area 4 subareas where subsistence harvests are of a higher intensity. Further, to protect confidentiality, data for tribal and community reporting entities with five or fewer SHARCs issued have not been included in ADFG subsistence reports since 2008. As a result, many communities known to participate in the BSAI halibut subsistence fishery are not listed in the data. For example, 16 reporting tribal or community entities listed in the SHARC data as engaged in BSAI halibut subsistence fishing in 2008 have no non-confidential data values for more recent years. Another 34 reporting tribal or community entities listed in the SHARC data that had no reported engagement (zero values) in the BSAI halibut subsistence fishery in 2008 have no non-confidential values in more recent years. In summary, while data based on SHARC surveys are the most complete and comprehensive recent subsistence halibut harvest information available, these limitations reduce their utility for many communities throughout the BSAI region and caution should be used in their interpretation.

The available community-level harvest data are published in Fall & Koster (2018), and online via ADFG's CSIS portal.[41] CSIS reports estimated harvest in pounds and pounds-per-capita, as well as the percentage of households in a community that harvest, attempt to harvest, or use (i.e., receive from harvesters) the resource.

[39] These regulations have been amended in May 2005 and October 2008. Current regulations can be found at 50 CFR Part 300.

[40] 50 CFR 300.65(g)(1), (2), or (3).

[41] Available at: http://www.adfg.alaska.gov/sb/CSIS/. For halibut, access CSIS >> Resource Category >> Fish. The currently available CSIS estimates are continuous from 1980 through 2016. Prior data is available for 1964, 1965, and 1973.

### 5.9.3 Subsistence Data

Table 40 shows estimated Alaska subsistence halibut harvest by Area 4 subarea fished during each year that was surveyed and fully reported from 2003 through 2016.[42] Surveys were mailed to all 8,779 SHARC holders in 2016 and information was supplemented through contacts and interviews in five Southeast and Western Alaska communities. The surveyors note that estimating catch in subareas with a small number of communities can be challenging and is sometimes influenced by a small number of individuals who do not return the survey. Harvest estimates also included 146 individuals who did not hold a SHARC, resulting in 8,925 potential respondents. ADFG received a survey return rate of 66 percent statewide. Return rates were higher in larger communities where the majority of SHARCs are issued. The 66 percent return rate is considered good, though not as high as the recent peak of 70.9 percent in 2012.

[42] For other areas, refer to Table 6 in Fall & Koster (2018).

**Table 40. Alaska Subsistence Halibut Harvest (net weight pounds) and Percentage of Alaska State Subsistence Total in IPHC Area 4 by Geographic Area Fished, 2003-2012, 2014, and 2016, with Selected ADFG Management Subareas**

| Area | | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2014 | 2016 | 2016 Relative to 11-year Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4A Eastern Aleutians** | **Harvest** | **21,197** | **28,877** | **35,615** | **27,062** | **14,946** | **19,553** | **33,499** | **14,548** | **13,606** | **9,543** | **7,727** | **8,054** | **-61%** |
| | % of AK Total | 2.0% | 2.4% | 3.0% | 2.4% | 1.4% | 2.2% | 3.9% | 1.8% | 2.0% | 1.4% | 1.0% | 1.1% | |
| **4B Western Aleutians** | **Harvest** | **2,582** | **916** | **1,351** | **2,761** | **1,997** | **4,737** | **1,175** | **450** | **537** | **1,698** | **254** | **294** | **-83%** |
| | % of AK Total | 0.2% | 0.1% | 0.1% | 0.2% | 0.2% | 0.5% | 0.1% | 0.1% | 0.1% | 0.2% | 0.0% | 0.0% | |
| **4C Pribilof Islands** | **Harvest** | **22,881** | **9,734** | **7,716** | **8,527** | **15,077** | **5,657** | **6,323** | **10,859** | **1,648** | **1,176** | **3,389** | **4,300** | **-49%** |
| | % of AK Total | 2.2% | 0.8% | 0.7% | 0.8% | 1.5% | 0.6% | 0.7% | 1.4% | 0.2% | 0.2% | 0.4% | 0.6% | |
| *St. George* | *Harvest* | *2,042* | *1,823* | *2,145* | *3,443* | *3,736* | *1,150* | *700* | *720* | *490* | - | - | *370* | *-75%* |
| | *% of AK Total* | *0.2%* | *0.2%* | *0.2%* | *0.3%* | *0.4%* | *0.1%* | *0.1%* | *0.1%* | *0.1%* | - | - | *0.1%* | |
| *St. Paul* | *Harvest* | *20,839* | *7,911* | *5,571* | *5,085* | *11,342* | *4,507* | *5,623* | *10,139* | *1,158* | *1,176* | *3,389* | *3,930* | *-44%* |
| | *% of AK Total* | *2.0%* | *0.7%* | *0.5%* | *0.5%* | *1.1%* | *0.5%* | *0.7%* | *1.3%* | *0.2%* | *0.2%* | *0.4%* | *0.5%* | |
| **4D NW Bering Sea** | **Harvest** | **4,380** | **10,923** | **5,848** | **8,297** | **3,204** | **3,131** | **644** | **1,171** | **615** | **672** | **54** | **-** | **-100%** |
| | % of AK Total | 0.4% | 0.9% | 0.5% | 0.7% | 0.3% | 0.4% | 0.1% | 0.1% | 0.1% | 0.1% | 0.0% | - | |
| **4E E. Bering Sea Coast** | **Harvest** | **53,775** | **28,501** | **54,119** | **70,743** | **52,135** | **15,898** | **8,749** | **10,055** | **6,168** | **8,384** | **71,327** | **41,370** | **20%** |
| | % of AK Total | 5.2% | 2.4% | 4.6% | 6.3% | 5.1% | 1.8% | 1.0% | 1.3% | 0.9% | 1.2% | 9.4% | 5.7% | |
| *Bristol Bay* | *Harvest* | *435* | *203* | *2,169* | *1,336* | *2,116* | *84* | - | - | *403* | *329* | *1,160* | *496* | *-34%* |
| | *% of AK Total* | *0.0%* | *0.0%* | *0.2%* | *0.1%* | *0.2%* | *0.0%* | - | - | *0.1%* | *0.0%* | *0.2%* | *0.1%* | |
| *Y-K Delta* | *Harvest* | *53,284* | *28,298* | *51,950* | *69,407* | *50,019* | *14,669* | *7,468* | *9,484* | *5,283* | *7,239* | *69,765* | *39,351* | *18%* |
| | *% of AK Total* | *5.1%* | *2.4%* | *4.4%* | *6.2%* | *4.8%* | *1.7%* | *0.9%* | *1.2%* | *0.8%* | *1.1%* | *9.2%* | *5.4%* | |
| *Norton Sound* | *Harvest* | *56* | - | - | - | - | *1,145* | *1,281* | *571* | *482* | *816* | *403* | *1,522* | *252%* |
| | *% of AK Total* | *0.0%* | - | - | - | - | *0.1%* | *0.1%* | *0.1%* | *0.1%* | *0.1%* | *0.1%* | *0.2%* | |
| **Area 4 Subtotal** | | **104,815** | **78,951** | **104,649** | **117,390** | **87,359** | **48,976** | **50,390** | **37,083** | **22,574** | **21,473** | **82,751** | **54,018** | |
| Area 4 as % of AK Total | | 10.1% | 6.6% | 8.9% | 10.4% | 8.5% | 5.5% | 5.9% | 4.6% | 3.2% | 3.1% | 10.9% | 7.4% | |
| **Alaska Total** | | **1,041,330** | **1,193,162** | **1,178,222** | **1,125,312** | **1,032,293** | **886,988** | **861,359** | **797,560** | **697,656** | **686,991** | **760,469** | **727,178** | **-22%** |

Source: Fall and Koster, 2018.

Survey estimates found that statewide subsistence removals accounted for 2.3 percent of total Alaska halibut removals in 2016.[43] In total, 4,408 individuals from 56 eligible rural communities (and non-resident tribal members) participated in 2016 subsistence fishing. This value was below the period average of 5,166 per year dating back to 2003; the number of participants has been below the period average since 2010. The average number of subsistence trips per individual participant was estimated to be between four and five, though the ADFG report notes that the highest area average occurred in Area 4E (7.3 trips per individual).

Across all areas, the 2016 subsistence harvest was estimated at 36,815 fish, or 727,178 net weight pounds, with an average weight of 19.8 pounds/fish. For comparison, the total removals from Alaska waters in 2016 was 32,426,635 pounds While subsistence accounted for roughly 2.3 percent of the total, the commercial fishery accounted for 54.5 percent, commercial bycatch in other fisheries accounted for 20.8 percent, recreational fisheries accounted for 17.9 percent, and non-harvest mortality (formerly "wastage") accounted for 2.8 percent. Since 2003, the estimated harvest in number of fish has ranged between 36,000 (2016 was the low value) and roughly 55,000. Harvest has been estimated at less than 40,000 per year since 2011. In poundage terms, subsistence harvest has been below 800,000 pounds since 2010, as compared to harvests between 1.0 million and 1.2 million from 2003 through 2007. The estimated average fish size of 19.8 pounds was high relative to previous years. Average size was between 18 and 19 pounds from 2008 through 2014 but was estimated from 20.8 to 23.7 from 2003 to 2006.

As in most years, the majority of 2016 subsistence harvest occurred in Areas 2C and 3A. Area 2C accounted for 60 percent of harvest by weight, while Area 3A accounted for 31 percent. Area 4E accounted for 5.7 percent of harvest. Area 3B accounted for 2.0 percent. Area 4A accounted for 1.1 percent; 4B accounted for less than 0.1 percent; 4C accounted for 0.6 percent, and no harvest was estimated for Area 4D. Within Area 4E, most harvest occurred in the Yukon-Kuskokwim Delta subarea (39,351 pounds), which was the seventh highest total among Alaska subareas. While Area 4E harvest was higher than the period average dating back to 2003, harvest was 42 percent lower than the 71,327 pounds estimated in 2014.

Note that these data do not include under 32-inch (U32) halibut caught by vessels fishing CDQ quota in Areas 4D and 4E that were retained under exemption as subsistence fish. The three CDQ groups to which this exemption applies are BBEDC, CVRF, and the NSEDC. The most recent report on U32 fish retained from CDQ fishing covers the 1998 through 2016 period.[44] As shown in Table 41, from 2002 (the first year for which data from all three groups are available) through 2016, CVRF reported an average annual net weight of 6,900 pounds, which was the highest among the three groups, but CVRF CDQ subsistence retention from commercial catch dropped to zero pounds in 2015 (and remained there in 2016) with the suspension of the local small boat commercial halibut fishery (discussed in Section 6.3.5). Aggregating all three CDQ groups, the average retention of U32 halibut from 2002 through 2016 was 14,409 pounds per year.

[43] By comparison, IPHC's website notes that 3 percent of coastwide removals (530 t), including those outside of Alaska, were for subsistence use (https://iphc.int/management/fisheries/removals-data). IPHC notes that subsistence fisheries throughout the entire managed range equate to fewer than 2 million pounds of removals annually, with most of those removals coming from British Columbia and the Eastern Gulf of Alaska.

[44] https://iphc.int/uploads/pdf/rara/iphc-2016-rara26.pdf

**Table 41. Reported Annual Amounts (pounds, net weight) of U32 Halibut Retained for Subsistence Use by CDQ Harvesters Commercially Fishing in Areas 4D and 4E, by CDQ Group, 1998-2016**

| Year | BBEDC | CVRF | NSEDC | Total |
|---|---|---|---|---|
| 1998 | 2,690 | 900 | 0 | 3,590 |
| 1999 | 418 | 7,483 | 0 | 7,901 |
| 2000 | 3,772 | 9,618 | 0 | 13,390 |
| 2001 | 10,773 | 19,494 | 0 | 30,267 |
| 2002 | 6,593 | 7,473 | 4,371 | 18,437 |
| 2003 | 6,346 | 5,034 | 2,961 | 14,341 |
| 2004 | 4,826 | 7,120 | 4,242 | 16,188 |
| 2005 | 8,750 | 11,335 | 3,136 | 23,221 |
| 2006 | 2,836 | 13,467 | 3,407 | 19,710 |
| 2007 | 3,135 | 11,398 | 4,516 | 19,049 |
| 2008 | 1,816 | 12,926 | 6,924 | 21,666 |
| 2009 | 922 | 4,277 | 6,060 | 11,259 |
| 2010 | 2,155 | 3,924 | 3,438 | 9,517 |
| 2011 | 2,752 | 9,909 | 4,206 | 16,867 |
| 2012 | 5,095 | 10,424 | 4,668 | 20,187 |
| 2013 | 3,493 | 5,250 | 1,290 | 10,033 |
| 2014 | 3,456 | 963 | 1,114 | 5,533 |
| 2015 | 2,460 | 0 | 2,206 | 4,666 |
| 2016 | 3,456 | 0 | 2,001 | 5,457 |

Source: IPHC 2017

The ADFG Technical Paper notes the estimated population in eligible rural communities. This information is useful in gauging the scale of individuals who might have benefitted from subsistence halibut fishing through "use," even though fewer than 5,000 individuals participated in direct harvest. The 2000 and 2010 U.S. Census estimates for this set of communities was 82,707 and 84,353, respectively. The Alaska Department of Labor and Workforce Development estimated the population of these communities in 2016 at 86,525. An additional 8,000 to 9,000 individuals who reside in non-rural Alaska communities are eligible to participate – and might also benefit through sharing – by virtue of their tribal membership. Further discussion on the local economics of subsistence uses is included later in this section.

ADFG estimates that roughly 75 percent of subsistence halibut are taken with setline gear; the remainder is taken with handline gear. SHARC survey respondents were asked to classify their subsistence and recreational fishing separately to avoid double-counting. Virtually all who reported subsistence and recreational catch separately were respondents from Areas 2C or 3A; those individuals were likely making a distinction between subsistence fishing with setlines and recreational fishing with handlines (e.g., rod and reel).

## 5.9.4 Economics of Subsistence Uses

Contemporary subsistence uses in rural Alaska occurs within a mixed economy. Communities engaged in subsistence harvest include both a fishing and hunting component and a cash component. Rural households use cash for items like fuel oil, electricity, clothing, and shelter, but also to purchase equipment that is necessary for subsistence activity (e.g., firearms, ammunition, nets, boats, snowmachines, and personal gear). In many rural communities, cash-paying jobs are few or unstable (seasonal or temporary). Economic activity often takes place in small-scale family groups, and economic goals tend to focus on the household unit. In the Aleutians, Reedy (2016) notes that, aside from housing,

groceries are the largest household expenditure in Unalaska and Adak. Groceries accounted for 8 percent to 21 percent (Atka) of expenditures among eight studied Aleutian communities.

Rural households with higher cash incomes are observed to produce *more* wild foods than those with less cash. Higher relative income and higher producing households are central to the sharing economy within subsistence use communities. ADFG's Division of Subsistence cites a "30-70 rule," whereby 30 percent of households in a community often produce 70 percent of the community's wild harvest in terms of usable pounds.[45] In addition to relative income, higher producing households might also be those with more available labor (i.e., physically capable individuals). For all subsistence resources, ADFG estimates that 60 percent of rural Alaska households harvest wildlife but 86 percent of households use the harvest. For fish in particular, the estimate is that 83 percent of households harvest subsistence fish but 95 percent use the harvest. These facts underline the reverberating effect of subsistence harvest throughout rural communities and their extensions through family and tribal ties. The 2014 ADFG Division of Subsistence Update estimated the monetary value of wild food harvest in defined subsistence areas at an annual value of $137 million to $275 million.[46] This calculation was based on usable pounds of all resource types (fish, land mammals, marine mammals, plants, birds, etc.) and a replacement cost ranging from $4/pound to $8/pound.

Reedy-Maschner and Maschner (2012) note that the delineation between commercial and subsistence activity in rural Alaska communities is often overstated. In many cases an individual will use the same vessel to harvest both commercial individual fishing quota (IFQ) and subsistence halibut, as well as other wild foods. For example, open skiff vessels that have a small commercial market in Atka are critical for residents' access to non-commercial wild foods at sea and on land (Reedy 2016). While vessel identification data are not available for subsistence use, the authors recognize the potential for interconnectedness between these two modes of harvest. Subsistence and commercial fishing also coincide in the previously mentioned case where U32 halibut taken on CDQ trips can be retained as subsistence fish in eligible communities. More broadly, engagement in small scale fishing – through a CDQ reserve or individually – can financially sustain a fishing platform that is also available for subsistence use. Moreover, cash earned from crew work on commercial vessels is often applied to the inputs necessary for subsistence harvest of both marine and land resources.

Individuals in eligible rural communities or tribal members might also conduct subsistence harvest in areas outside of the place where they reside. For example, a study of subsistence fisheries in eight communities in the Arctic-Kotzebue management subarea from 2012 through 2014 included halibut harvest by residents of non-coastal communities (Braem *et al*., 2018). Halibut were recorded as a minor species in areas that predominantly focus on salmon and freshwater species such as the Bristol Bay area (Halas and Neufield, 2018). These reports indicate that individuals may travel to participate in subsistence fishing with family or other relations and bring those resources back to their home economy.

Braem *et al.* (2018) also note occurrences where localized disasters were mitigated or alleviated by access to subsistence fishing opportunities, or by distribution of subsistence species from CDQ groups. For example, in 2014 an unusual thaw event caused fish and game that were stored outside – as is customary in the area – to spoil. Data reflect that residents in the affected communities increased subsistence harvest that year to replace the lost food. In both that event and an event where severe coastal storms destroyed food caches, a CDQ group (NSEDC) and an Alaska Native Claims Settlement Act (ANCSA) corporation (NANA Inc.) provided halibut and salmon from harvest on corporation-owned vessels and facilitated contributions through bycatch donation programs.

[45] http://www.adfg.alaska.gov/static/home/library/pdfs/subsistence/ak_economies_subsistence.pdf

[46] Ibid.

## 5.9.5 Halibut in the Context of Other Subsistence Resources

Halibut is just one of many important sources of wild foods in Aleutian communities. A 2016 report commissioned by the U.S. Department of Interior Office of Subsistence Management (OSM) reported the most recent available data on total subsistence harvest for eight Aleutian Islands communities: Unalaska, Nikolski, Atka, Adak, Akutan, False Pass, Nelson Lagoon, Port Heiden (Reedy 2016). Among 13 selected species, halibut ranked third in usable subsistence pounds per capita behind caribou and salmon. Other important non-salmon species included Pacific cod, rockfish, and greenling (pogies). The communities with the greatest per capita non-salmon fish harvest were Akutan, Unalaska, and Atka. Adak and Akutan were the only communities where per capita non-salmon harvest outstripped salmon harvest. Akutan and Unalaska were the communities that relied on non-salmon species and had little land mammal harvest. Some of the studied Aleutian Islands communities – e.g., Atka – were relatively more reliant on land mammals than fish, but still recorded salmon and non-salmon harvests in line with the volumes in other communities. Reedy (2016) includes data on subsistence use of birds, eggs, plants, and invertebrates with data collected between 2009 and 2015. Within the APICDA region, Unalaska is the community with the greatest number of halibut subsistence fishermen and the largest volume of harvest. The AFSC has compiled socioeconomic community profiles on each community in the region based on ADFG data, United States Fish and Wildlife Service (USFWS) reports, and researchers' interaction with civic leaders through a survey to elicit communities' most important subsistence species. AFSC found that halibut were specifically listed as a key subsistence resource in Adak, Unalaska, and St. George. The profiles for Akutan and Atka referred generally to 'fish' or 'non-salmon fish.' Other key resources in the region include salmon, crab, Pacific cod, seal, sea lion, duck, geese, marine/terrestrial birds, marine invertebrates, and local vegetation.

As noted in Section 4.5.5, subsistence use of Pacific cod has deep roots in the social, cultural, and economic fabric of communities in the Aleutian region; Pacific cod shows up as a resource in the archaeological record and patterns of use continue to evolve. A 2003 study of Unalaska ranked Pacific cod eighth in terms of subsistence harvest and use of species harvested elsewhere, behind four salmon species, halibut, moose, and crab, but ahead of seal and caribou (Hamrick and Smith 2003).

A survey conducted by ADFG in 2008 found that 33.3 percent of households in Akutan used Pacific cod, which was less that the percentage using halibut (86.1 percent), char (63.9 percent), and Dolly Varden (58.3 percent).[47] The range of subsistence uses in Akutan was also lower in 2008 than in 1990. In 1990, 27 kinds of resources were used by at least 50 percent of Akutan households. In 2008, without exception, the percentage of households using these resources dropped, including 51 percent less households using Pacific cod. Involvement of households in commercial fishing is often associated with high levels of production of fish and wildlife resources for subsistence uses. Of all Akutan's households, 33 percent were involved in commercial fishing in 2008. These households averaged harvests of 941 pounds of wild foods, compared to 538 pounds for other households. A 2016 study of 26 households in Akutan (70 percent of households) found that the percentage of households harvesting subsistence resources in 2015/2016 had declined for all resources except for salmon relative to findings from similar surveys in the 1990s (Schmidt *et al*. 2018).

## 5.9.6 Cooperative Subsistence Research

The Chaninik Qaluyat Nunivak (CQN) Working Group, formed in 2013, is an example of cooperation between subsistence users and the BSAI commercial groundfish fishery.[48] CQN is formed of members

[47] CSIS data accessed in 2018.

[48] Information in this subsection provided via personal communication by T. Loomis, CQN co-chair (August 2019).

from between the Bering Sea Elders Group, Association of Village Council Presidents, and the Alaska Seafood Cooperative. The group was created out of a desire to work together to provide opportunity for a productive yellowfin sole fishery while minimizing the impacts on local village residents who use the same region for subsistence and other fisheries. Chief among the issues of concern is the effect of halibut bycatch in the yellowfin sole trawl fishery on subsistence resources near the Kuskokwim Bay, Etolin Strait, and Nunivak regions.

Recently, CQN has supported research into deck sorting of halibut on Amendment 80 trawl vessels to reduce bycatch mortality rates[49] and methods to reduce the impact of yellowfin sole trawling in the Kuskokwim Bay area. CQN is supporting the deployment of real-time seafloor temperature loggers to help both yellowfin sole vessels and subsistence halibut fishermen identify the optimal time to harvest their target species. Using baseline knowledge of the temperatures that correlate to target species presence, temperature data may help trawl vessels minimize the time that they need in the area to achieve their harvest objectives and thus reduce their impact on subsistence fishing in the form of bycatch. Temperature readings might also allow subsistence users to optimize their effort and improve their harvest efficiency. CQN's contributions to halibut deck sorting research includes funding for satellite tags that improve understanding of release mortality rates and the efficacy of the deck sorting initiative.

## 5.10 Sport Halibut Harvest

The sport fishing category includes non-commercial recreational fishing and commercial recreational fishing, generally referred to as charter fishing. Together, halibut and salmon are the major sport fish species in Alaska, though NMFS's regulatory authority for recreational fisheries only extends to halibut. Sport fishing regulations for Pacific halibut in Alaska are developed on the international, federal, and state levels by the IPHC, NPFMC, NMFS, and ADFG. Although ADFG does not directly manage Alaska halibut fisheries, that agency has adopted regulations that affect sport fishing for halibut.

Across all IPHC areas, including those outside of Alaska, recreational landings account for roughly 20 percent of total halibut removals, according to the most recent available IPHC data (2017).[50] The greatest proportion of removals was commercial landings (60 percent in 2017). The third greatest proportion was bycatch mortality (14 percent in 2017). Subsistence removals accounted for three percent in 2017. This section is focused on halibut fishing in IPHC Area 4, where non-commercial recreational catch is quite low and relatively little or no commercial recreational catch occurs, depending on the subarea. A 2013 ADFG estimate found that charter operations in Area 3B and Area 4, combined, represented less than 0.4 percent of Alaska's total charter/non-charter recreational yield.[51] For this reason, *all* recreational anglers in areas outside of 2C and 3A (i.e., in Area 4) are subject to the regulations that govern unguided (non-commercial, non-charter) anglers in Areas 2C and 3A. The most salient of these regulations are a sport fishing season that extends from February 1 to December 31 and a bag limit of two halibut of any size per person per day unless otherwise specified. The complete regulations are defined in Sections 26 and 29 of the IPHC's annual management measures and summarized by NMFS for public consumption.[52]

Due to the relatively small volume of recreational use in Area 4 and the management under a daily bag limit rather than an area/sector allocation – such as the Catch Sharing Plan that defines the commercial IFQ and charter sector allocations in Areas 2C and 3A – IPHC accounts for recreational removals using a

[49] See deck sorting information provided in Section 3.4.2 of the DEIS to which this SIA is appended.

[50] https://iphc.int/management/fisheries/removals-data

[51] See Section 4.4, of the Recreational Quota Entity Secretarial Review Draft at https://www.npfmc.org/wp-content/PDFdocuments/halibut/HalibutCharterRQE517.pdf

[52] https://www.fisheries.noaa.gov/alaska/recreational-fishing/unguided-sport-fishing-halibut-alaska

projection. Projected sport harvest in areas outside of 2C and 3A are combined with projected subsistence harvest and projected bycatch in non-target commercial fisheries and then deducted from Total Constant Exploitable Yield (TCEY) to arrive at Fishery Constant Exploitable Yield (FCEY), which then becomes the annual combined catch limit for the commercial IFQ sector and the charter allocation to 2C and 3A.[53]

The analysts summarize unguided recreational catch of halibut for the ADFG management areas that coincide with Area 4 in which halibut were recorded on the annual Statewide Harvest Survey (SWHS) from 2010 through 2017 (Table 42). Those areas include ADFG Areas R, S, and T in the Southcentral region and Areas V and W in the Arctic-Yukon-Kuskokwim region.[54] The primary place where unguided recreational halibut fishing occurs within Area 4 is in Unalaska Bay in Area R. The data in the table represent the number of halibut that were retained. (Records dating farther back in time showed a one-year incidence of recreational halibut catch in Areas V and W in 2005 (32 fish in Area V and 96 fish in Area W). ADFG reports final sportfishing harvest estimates to IPHC for use in the Commission's calculation of total removals and setting FCEY for the commercial IFQ fishery and the 2C/3A charter sector. ADFG's most recent letter to IPHC, accompanying final 2017 estimates and dated October 19, 2018, outlines the department's estimation methods. Estimates for IPHC areas 3B and 4 combine charter and unguided activity and are based entirely on the SWHS. Because ADFG does not sample recreational harvest in those areas, the department applies the average fish weight of unguided Kodiak sport harvest to calculate yield (15.35 pounds net weight in 2017). In 2017, recreational halibut harvest in Area 4 was estimated to equal 6,000 pounds of removals, which was down from 15,000 pounds in 2016. The October 2018 ADFG letter provided preliminary 2018 harvest projections for Area 4, projecting 758 fish at an average net weight of 14.08 pounds (Kodiak unguided average) for a yield of 11,000 pounds in removals.[55]

**Table 42. Unguided Recreational Harvest, by Selected Region and Area, 2010-2017 (number of fish)**

| Region | Area | Unguided Recreational Harvest (number of fish) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
| Southcentral | Alaska Peninsula/Aleutian Islands (Area R) | 2,352 | 2,034 | 3,625 | 2,025 | 1,063 | 778 | 1,657 | 409 |
| | Kvichak River Drainage (Area S) | 0 | 33 | 0 | 0 | 0 | 32 | 0 | 0 |
| | Nushagak, Wood River, and Togiak (Area T) | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 |
| Arctic-Yukon-Kuskokwim | Kuskokwim River/Bay Drainages (Area V) | 0 | 0 | 0 | 0 | 33 | 0 | 0 | 0 |
| | Seward Peninsula/Norton Sound (Area W) | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 |

For comparison of the scale of recreational halibut harvest in Area 4 to that of Areas 2C and 3A, the analysts refer to ADFG's post hoc harvest estimates that are presented to the Council each December and

[53] This process is diagramed in a flowchart in Figure 4-1, Section 4.4, of the Recreational Quota Entity Secretarial Review Draft https://www.npfmc.org/wp-content/PDFdocuments/halibut/HalibutCharterRQE517.pdf

[54] Maps of the regions and areas as well as SWHS data are available to the public at: http://www.adfg.alaska.gov/sf/sportfishingsurvey/.

[55] ADFG assumes a 6.0 percent release mortality rate in Area 4 based on non-charter data from other areas. Due to the low amount of catch, release mortality for 2017 was estimated at 0.000 million pounds (zero is an effect of rounding to three digits). The same mortality rate is assumed for preliminary 2018 estimates.

available in the Council's electronic catalog.[56] In 2017, the most recent complete year for which data are available, Area 2C charter harvest was 70,647 fish (charter logbook data) with a net weight yield of 901,000 pounds. Non-charter harvest in 2C was 60,817 fish (SWHS estimate) with a net weight yield of 1,218,000 pounds. Area 3A charter harvest was 142,664 fish (charter logbook data) with a net weight yield of 2,076,000 pounds. Non-charter harvest in 3A was 108,972 fish (SWHS estimate) with a net weight yield of 1,530,000 pounds. These annual report document recreational removals in 2C and 3A dating back to 1995. Total recreational harvest estimates (charter and non-charter) in Area 2C have ranged from 1,029,000 pounds in 2011 to 3,264,000 pounds in 2008. Total recreational harvest estimates (charter and non-charter) in Area 3A have ranged from 3,542,000 pounds in 2016 to 6,283,000 pounds in 2007. Recreational harvest estimates for 2018 will be available in December 2019.

Another measure of recreational fishing engagement at the community level is the number of sportfishing licenses sold in a community. AFSC's Alaska Community Profiles[57] uses AKFIN data to map the number of licenses sold in a community, sportfish licenses sold to community residents, charter fishing businesses in a community, and charter guide licenses held by community residents. The most recent data included in the map function is for 2014. While use of these licenses does not necessarily indicate engagement in the halibut recreational fishery, it gives some indication of communities' sportfishing engagement in general. Of the Bering Sea communities identified in the Social Impact Assessment chapter, Unalaska, Dillingham, King Salmon, and Nome possessed the greatest number of sportfishing licenses, though far fewer than communities such as Kodiak and Homer. The only active charter fishing business identified in the study area by the AFSC Alaska Community Profiles in 2014 was a single operation in Unalaska.

Unalaska experienced a pulse in halibut sport charter business activity following the local landing of a new world-record Pacific halibut in 1995 and then another 1996, with the 459-pound Pacific halibut caught in 1996 still remaining the current (as of 2019) all-tackle world-record.[58] The community, however, saw drop-off in sport charter demand in more recent years. Information gathered during recent (July 2019) fieldwork in the community suggest that there are currently two fishing charter businesses in the community, both of which are active during the summer months. One is a long-established undertaking run by an otherwise retired individual who started the business while still working full-time in another occupation in the community. The other is relatively recently established and is primarily run by two individuals who currently have other full-time employment. Depending on weather, sea conditions, fishing conditions, and customer preference, charter destinations at times range widely beyond Unalaska Bay. A long-established third charter business is also active in Unalaska, but a part of a multi-faceted business with the tourism-oriented portion of that business focused on bird-watching, whale-watching, eco-tourism, and the like rather than on recreational fishing (although, according to its owner, charter fishing was included in its portfolio of services in its early years of operation).

Aside from salmon and crab, sportfishing for non-halibut species in the ADFG saltwater areas that coincide with IPHC Area 4 also occurs at low volumes. Reported catch of groundfish species that are also considered in this analysis included Pacific cod, rockfish (primarily black and yelloweye), and sablefish. Recreational catch of Pacific cod almost exclusively occurred in Unalaska Bay within Area R (Alaska Peninsula/Aleutian Islands). From 2010 through 2017, total catch ranged from 686 fish (2017) to 3,789 fish (2012) with an annual average of 1,317 fish and a median of 985 fish. Fifty-two Pacific cod were caught in Area T during 2016. Recreational catch of rockfish and sablefish were also exclusive to Area R.

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[56] http://meetings.npfmc.org/CommentReview/DownloadFile?p=6572ad05-3661-4e0a-8b48-f3048e099bdb.pdf&fileName=C1%20Area%202C%203A%20Sport%20Harvests%20Final%202017.pdf

[57] http://www.afsc.noaa.gov/maps/ESSR/recreation/default.htm

[58] https://igfa.org/igfa-world-records-search/?search_type=CommonNameSummary&search_term_1=Halibut%2C+Pacific. Accessed 8/15/2019.

Average rockfish catch was 1,216 fish during the 2010 through 2017 period (maximum of 2,455; minimum of 409). Average sablefish catch was 72 fish (maximum of 133; minimum of zero).

# 6 Regional and Community Context of the Fisheries

Relatively recent information on the range of BSAI groundfish fishing communities relevant to the proposed action may be found in a number of other NPFMC groundfish-related documents, including the Proposed Bering Sea/Aleutian Islands Halibut Prohibited Species Catch Limit Revisions – Appendix C: Community Analysis (AECOM 2015) and the Catcher/Processor Mothership Restrictions in the Bering Sea and Aleutian Islands when taking Directed Non-CDQ Pacific Cod Deliveries from Trawl Catcher Vessels – Appendix 1: Social Impact Assessment (Wislow Research 2019).

Less recent, but more comprehensive community/fishery context information may be found in the Alaska Groundfish Fisheries Final Programmatic Supplemental Environmental Impact Statement (NMFS 2004) and Sector and Regional Profiles of the North Pacific Groundfish Fishery (Northern Economics and EDAW 2001), in a technical paper (Downs 2003) supporting the Final Environmental Impact Statement for Essential Fish Habitat Identification and Conservation in Alaska (NMFS 2005) as well as that Environmental Impact Statement itself, the Final Environmental Impact Statement for Steller Sea Lion Protection Measures for Groundfish Fisheries in the Bering Sea and Aleutian Islands Management Area (NOAA 2014), and Final Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis to Reduce Gulf of Alaska Halibut Prohibited Species Catch Limits, Amendment 85 to the Fishery Management Plan for Groundfish of the Gulf of Alaska: Appendix 7 – Community Analysis (AECOM 2013). These sources also include specific characterizations of the degree of individual community and regional engagement in, and dependency upon, the North Pacific groundfish fishery.

For this analysis, these documents, as well as other NPFMC-related documents concerning other fisheries but containing detailed community profile information for a number of the BSAI groundfish-related communities, are incorporated by reference, including the Five-Year Review of the Crab Rationalization Management Program for Bering Sea and Aleutian Islands Crab Fisheries – Appendix A: Social Impact Assessment (AECOM 2010); Comprehensive Baseline Commercial Fishing Community Profiles: Unalaska, Akutan, King Cove, and Kodiak, Alaska – Final Report (EDAW and Northern Economics 2005); and Comprehensive Baseline Commercial Fishing Community Profiles: Sand Point, Adak, St. Paul and St. George, Alaska – Final Report (EDAW/AECOM and Northern Economics 2008).

In general, the fishing communities expected to be potentially directly and adversely affected by the proposed action alternatives are those BSAI groundfish communities where potentially affected vessels are owned; where vessels make deliveries to shore-based processors and generate associated economic activities and public revenues, including those derived from landing or severance taxes; where vessel support services are provided; where vessels are otherwise located or homeported during the year and generate some level of related economic activity; and where skippers and crew reside. Similarly, in general, the fishing communities expected to be potentially directly, indirectly, and adversely affected by the no-action alternative under specific circumstances, but potentially directly, indirectly, and beneficially affected by proposed action alternatives under other circumstances, are those BSAI halibut communities where potentially affected vessels are owned; where vessels make deliveries to shore-based processors and generate associated economic activities and public revenues, including those derived from landing or severance taxes; where vessel support services are provided; where vessels are otherwise located or homeported during the year and generate some level of related economic activity; and where skippers and crew reside.

Community-level information for some of these potential data categories, however, is not available or is too inconsistently collected to be useful for multi-community analyses. Information on vessel homeport (or the meaning of homeport designations for given vessels), for example, is known to be inconsistent enough for homeport designation to be of limited utility as an indicator of location of vessel-associated economic activity in general; direct information on the location of vessel purchases of support services specifically is not readily available. Information is not readily available on the community of long-term residence of vessel skippers and crew and processing crew that work aboard the potentially affected

vessels or in the shore-based processors active in the BSAI groundfish and/or BSAI halibut fisheries. Information developed for other recent analyses, however, suggests that, generally, companies operating vessels in the BSAI groundfish and BSAI halibut catcher vessel sectors tend to recruit crew from many locations, depending on the specific location of vessel ownership, homeport, and/or the scale and scope of vessel operations. Different shore-based processors use a combination of local and regional or national hiring that varies based on the location of the processing plant; the processing season and combination of species processed; and individual operational characteristics, including the size of plant operations, the mix of product forms produced, and the scale of the operating company. To the extent that these types of information are available for the individual communities characterized, a summary of these types of data is included in the regional/community characterizations below.

The following sections provide a regional and community-by-community characterization of the local community context of BSAI groundfish commercial, BSAI halibut commercial, and BSAI halibut subsistence fisheries for those communities. For Alaska communities, these are organized by CDQ region as these regions provide logical units of socioeconomic analysis, covering the BSAI coastal region, and the fact that CDQ entities mediate, to varying degrees, direct engagement of local communities in the relevant fisheries (and would themselves be potentially affected in multiple ways by the proposed management alternatives).

# 6.1 Aleutian Pribilof Islands Community Development Association Region, Unalaska, and Adak

## 6.1.1 Location

APICDA is the CDQ entity that includes communities along the Alaskan Peninsula, in the Aleutian Islands, and one of the two communities in the Pribilof Islands. As identified through initial screening criteria, BSAI communities potentially substantially engaged in or dependent upon the BSAI/Area 4 halibut fishery in APICDA include Akutan, Atka, False Pass, and St. George. Other communities in APICDA include Nelson Lagoon and Nikolski.

Unalaska and Adak, the two non-CDQ communities on the Aleutian Chain, are included in this regional discussion due to the key roles they play in the BSAI fisheries relevant to this analysis. Because of substantial existing capacity to participate in Bering Sea fisheries, Unalaska did not qualify as a CDQ community, but with an Aleut population larger than that of each of the APICDA communities,[59] it is an ex-officio member of APICDA, and Unalaska residents participate in a number of APICDA programs. Adak was almost exclusively a military installation at the time of the creation of the CDQ program and therefore was not considered for inclusion as a CDQ community, but following base closure has been the focus of effort by the regional ANCSA corporation (the Aleut Corporation) and others to develop a sustainable civilian community with a local economy based on commercial fishing and maritime services.

Akutan, False Pass, and Nelson Lagoon are located within the Aleutians East Borough (AEB). The rest of the APICDA member communities, along with Unalaska and Adak, are not located within an organized borough.[60]

[59] In 2010, Unalaska's Aleut population was larger than the Aleut populations of the potentially BSAI halibut dependent APICDA member communities (Akutan, Atka, and St. George) combined, and it was only about seven percent smaller than the Aleut populations of all APICDA member communities combined.

[60] AEB communities that are not members of APICDA include Cold Bay, King Cove, and Sand Point.

## 6.1.2 Historic Overview

Archaeological evidence suggests that the Alaskan peninsula and Aleutian Islands have been inhabited for around 9,000 years. Excavation of kitchen-middens revealed consistent use of marine resources, including bone fish hooks and fish scrapers, stone sinkers, as well as bones of many marine species including whales, sea-lions, sea otters, seals, sea birds, fish (including halibut, cod, and sculpin) and mollusk shells (Jochelson 2002). The Native people of the region refer to themselves as Unangax̂ (Unangam tunuu in their own language) or Aleut (a name applied by foreigners in the mid-1700s) (APIA 2019). Unangax̂ subsisted on sea mammals, fish, shellfish, birds, and plants. They fashioned lines of dried, braided kelp, notched stone sinkers and large two-piece bone hooks with a curve and a barb to fish for cod and halibut while smaller rounded hooks made from a single piece of bone or shell were used to fish for sculpin and flounders (Collins *et al.* 1945).

Russian ships first made contact in the Aleutians in 1741 and subsequently discovered St. George in 1786 while searching for fur seal breeding grounds. Seasonal work camps were established in St. George where Russians forced many Unangax to relocate and harvest fur seals. These seasonal work camps became permanent, year-round villages by the early 1800s. Commercial fishing for cod and salmon was developed rapidly in the region as the fur industry declined, and by the early 1900s, commercial fishing became the largest source of employment in the Aleutians, concentrated particularly in the eastern region (NPFMC 2007). During World War II many Unangax were evacuated and interned in Southeast Alaska.

Larger scale commercial fishing started in the early 1900s when fishing stations opened throughout the eastern Aleutians, and one shore station opened at Attu (western Aleutians) where Atka mackerel and greenling were caught. Salmon canneries opened in the eastern islands of Unalaska and Umnak, with limited success. A purse seine fishery for herring developed in the vicinity of Unalaska with catches peaking in 1932 at about 2,800 metric tons, then declining until the fishery was abandoned in 1946 (INPFC 1979, Bakkala 1981). Whaling was also common in the early 1900s. Norway built a whaling station in Akutan in 1907 which operated until 1939 when it was sold to the Navy with the threat of World War on the horizon.

A mostly foreign groundfish fleet developed in the 1960s targeting pollock and Pacific ocean perch. At this time the American fleet started fishing for red king crab near Adak and Unalaska (NPFMC 2007). As the abundance of red king crab declined in the Aleutian Islands, fishers gradually transitioned to harvesting golden king crab and by 1982, golden king crab landings exceeded those for red king crab, although the total volume of golden king crab landed was never as high as for red king crab (Otto 1981). Regulations restricted foreign fishing beginning in the mid-1970s and, by the 1990s the groundfish fleet was a domestic fleet with total catches in excess of 150,00 metric tons. In 1999 the pollock fishery was severely restricted due to concerns regarding the fishery's impact on Steller sea lions (Barbeaux 2004). Since then, total groundfish catches have averaged slightly above 100,000 metric tons and are roughly 50 percent Atka mackerel, 30 percent Pacific cod and 15 percent Pacific ocean perch. Recently, the highest exploitation rates on groundfish are for Pacific cod and Atka mackerel, followed by halibut, Pacific ocean perch and sablefish, targeting pollock, Atka mackerel, and Pacific cod (NPFMC 2007).

A summary of the institutional structure of the contemporary APICDA region communities relevant to this SIA analysis is shown in Table 43. Narrative summaries of the historic context of each community listed are presented in the following sections.

**Table 43. Community Institutional Summary (Selected APICDA CDQ Communities, Adak, and Unalaska)**

| Community | Borough | ANCSA Regional Corporation | ANCSA Village Corporation | Tribal Government | Municipal Government |
|---|---|---|---|---|---|
| Adak | Unorganized | Aleut Corporation | none | none | City of Adak |
| Akutan | Aleutians East | Aleut Corporation | Akutan Corp | Native Village of Akutan | City of Akutan |
| Atka | Unorganized | Aleut Corporation | Atxam Corp | Native Village of Atka | City of Atka |
| St. George | Unorganized | Aleut Corporation | St. George Tanaq Corp | Saint George Island | City of St. George |
| Unalaska | Unorganized | Aleut Corporation | Ounalashka Corp | Qawalangin Tribe of Unalaska | City of Unalaska |

### 6.1.2.1 Adak

Adak island was abandoned in the early 19th Century when Aleut hunters moved or were forced eastward because of the Russian fur trade. The Native people continued to use the island as a place to fish and hunt until the beginning of World War II. The island had been designated in 1913 as part of the Aleutian Island Reservation, but in the 1940's became a key operations and supply location for United States military forces after the Japanese occupation of Kiska and Attu Islands during World War II. Adak's population in the spring of 1944 was made up of at least 32,000 military personnel, peaking at approximately 90,000 during the early staging periods of the war. After World War II, Adak was developed into a Naval Air Station and played an important role during the Cold War as a submarine surveillance center. The navy base housed 6,000 personnel and their families during its peak, but substantial cutbacks occurred in 1994 and navy family housing and schools were closed. Adak Naval Station officially closed on March 31, 1997. Aleut Corporation acquired the majority of Adak's facilities in 2004 in a land transfer agreement under the federal Base Realignment and Closure process and in 1998 about 30 families with children (mostly Aleut Corporation shareholders) relocated to Adak.

The Adak incorporated as a 2nd Class City in 2001 and provides police and fire services, electricity (from diesel fuel), water, and a sewer system. Adak Medical Clinic is operated by Eastern Aleutian Tribes. Although Adak was an Aleut village in earlier times, it was a military base during the latter half of the twentieth century. For that reason, it was not included in the Alaska Native Claims Settlement Act (ANCSA) and is not federally recognized as a Native village. Aleut Corporation has taken an active role in the development of the city after the base closure, taking over responsibility for some services to the community, such as the landfill.

### 6.1.2.2 Akutan

Akutan began in 1878 when the Western Fur and Trading Company established a sea otter trading post and a Russian Orthodox Church and school were built. Alexander Nevsky Chapel was built in 1918 to replace the original structure. The Pacific Whaling Company built a whale processing station across the bay from Akutan in 1912. It was the only whaling station in the Aleutians and operated until 1939. After the Japanese attacked Unalaska in June 1942, the U.S. government evacuated Akutan residents to the Ketchikan area. The village was re-established in 1944, although many villagers chose not to return. This exposure to the outside world brought many changes to the traditional lifestyle and attitudes of the community. The Wakefield Seafood Processors began to process king crab in 1948. In 1979, Seawest, Inc. purchased Wakefield operations, which triggered rapid expansion of Akutan's shore-based facilities. Akutan incorporated in 1979 as a 2nd Class City with a mayoral form of government and is a part of the

AEB.[61] The Akutan Corporation is the local ANCSA chartered village corporation, and the Aleut Corporation is the regional ANCSA chartered corporation.

### 6.1.2.3 Atka

Atka is a Native village that has persisted for thousands of years, though its population is declining. The island has been occupied by Unangas for at least 2,000 years. Recent archaeological evidence indicates that the present village site may have had human use since prehistoric times. The townsite was settled in the 1860s. After the end of the sea otter hunting era in the late 1800s, Atka had no viable cash economy. Reindeer were introduced to the island in 1914. During the 1920s, Atka became relatively affluent due to fox farming. After the Japanese attacked Unalaska and seized Attu and Kiska in June 1942, the U.S. Government evacuated Atka residents to the Ketchikan area and burned the village to the ground to prevent Japanese forces from using it and advancing. The community was rebuilt by the U.S. Navy after the war, and residents were allowed to return. Many Attu villagers, released from imprisonment in Japan in 1945, relocated to Atka. Atka incorporated as a 2nd Class City in 1988, is located in the Aleutians West Census Area, and is not under the jurisdiction of a borough. The community has a mayor and a seven-member city council and municipal employees which include a fire chief, a Village Public Safety Officer (VPSO), and Anchorage-based City Administrator. In addition, there is a U.S. Bureau of Indian Affairs (BIA) recognized Tribal government, and an ANCSA chartered Native village corporation (Atxam Corporation). The regional ANCSA chartered Native Corporation representing Atka is the Aleut Corporation.

### 6.1.2.4 St. George

In 1868, the Pribilof Islands were declared a special Federal Reserve with the purpose of managing fur seals and other fur-bearing species, and the federal government began to contract seal harvest to private companies. In 1870, the U.S. Government awarded the Alaska Commercial Company a 20-year sealing lease, and they provided housing, food, and medical care to the Aleuts in exchange for seal harvesting. In 1890, a second 20-year lease was awarded to the North American Commercial Company. However, fur seals were severely over-harvested, and poverty ensued. The 1910 Fur Seal Act ended private leasing on the islands and placed the community and fur seals under the U.S. Bureau of Fisheries. Food and clothing were scarce, social and racial segregation was practiced, and working conditions were poor. During World War II, the Pribilof Aleuts were moved to Funter Bay on Admiralty Island in Southeast Alaska as part of the emergency evacuation of residents from the Bering Sea. Unlike Aleutian Islands residents, they were confined in an abandoned cannery and mine camp. In 1979, the Pribilof Aleuts received $8.5 million in partial compensation for the unfair and unjust treatment the federal administration subjected them to from 1870 to 1946. With Alaska Statehood in 1959, 70 percent of revenues from the commercial fur seal hunt began to go to the State of Alaska. This decrease in federal revenue, in combination with an unexplained decline in productivity of the seal population in the 1960s, led the federal government to begin phasing out of the Pribilof Islands. Federal sealing operations were consolidated in Saint Paul in 1972, leaving Saint George as a research station to monitor the status of the fur seal population. Many Saint George residents chose to relocate to Saint Paul or left the Pribilof Islands entirely, but a majority remained in the community. In 1983, Congress passed the Fur Seal Act Amendments, which brought government control of the commercial seal harvest and the federal presence in the Pribilof Islands to an end. Saint George incorporated as a 2nd Class City in 1983.

[61] Among Alaska communities in the BSAI region identified through use of initial screening criteria as potentially substantially engaged in or substantially dependent upon the BSAI commercial halibut fishery, only Akutan and False Pass are part of an organized borough.

#### 6.1.2.5 Unalaska

Unalaska became a Russian trading port for the fur seal industry in 1768. In 1787, many hunters and their families were enslaved and relocated by the Russian American Company to the Pribilof Islands to work the fur seal harvest. By the late eighteenth century, the Aleutians had for the most part been abandoned by Russians in favor of eastern trapping grounds. However, several strategic outposts remained including one in Iliuliuk Harbor. In 1825, the Russian Orthodox Church of the Holy Ascension of Christ was constructed. The founding priest, Ivan Veniaminov, composed the first Aleut writing system with local assistance and translated scripture into Aleut. Since Aleuts were not forced to give up their language or culture by the Russian Orthodox priests, the church became strong in the community. By 1830 and 1840, however, only 200 to 400 Aleuts lived in Unalaska.

By 1850, Russians abandoned the outpost due to the diminished availability of furs. American influence in Alaska increased as people migrated northward; drawn by furs, fishing, and whaling. Dutch Harbor flourished in the 1880s as a coaling station and commercial trade center. The Klondike Gold Rush of the 1890s brought many ships to Dutch Harbor, lured by its position as a gateway to the gold fields of northwest Alaska. By the turn of the twentieth century, several seafood processors may have been in operation processing herring, salmon, and whale meat. As coal began to be replaced by oil as ship fuel, the coal trade began to diminish in Dutch Harbor. Fox farming became popular throughout the Aleutians in 1910, which brought economic relief to Unalaska until the Great Depression of the 1930s saw the demise of the fur industry. Unalaska incorporated as a 1st Class City in March 1942. Dutch Harbor Naval Station and Fort Mears were established in Unalaska as diplomatic relations with the Japanese deteriorated. Other military installations were established on Hog Island and remote locations throughout the area. Permanent facilities including a major hospital complex, docking and fueling facilities, submarine drydocking and repair facilities, an airport, and extensive living and recreational facilities were built to serve military personnel stationed in Unalaska. During this time, many Native residents were evacuated to Southeast Alaska communities. On June 3, 1942, Japanese naval forces bombarded Dutch Harbor, damaging or destroying several facilities and killing dozens of U.S. military personnel. Following the war, many villages returned only to find their villages severely damaged or destroyed. The population of Unalaska following the conflict was reported to be about 300. Interest in fishery resources in the Aleutians began to increase around 1950 with the harvesting and processing of halibut, salmon, and king crab. The growth of the king crab fishery in the early 1960s greatly improved the local economic condition. Unalaska became a rapidly growing and culturally diverse community, primarily focused on fishing and fish-processing activities. Subsistence activities are important to both the Unangan community and many long-term non-Native residents, as well.

### 6.1.3 Demographics

Demographic and socioeconomic characteristics for the potentially substantially engaged or substantially dependent BSAI halibut communities as determined by use of initial screening criteria in the APICDA region are presented in Table 44. All of the APICDA member communities can be considered small, rural communities with a high percentage of Alaska Native residents.

For those communities considered BSAI halibut-dependent, the communities of Atka and St. George have total populations of 61 and 102 people, respectively. Approximately 95.1 and 88.2 percent of residents in Atka and St. George, respectively, reported they were Alaska Native during the 2010 U.S. Census. The community of Akutan is somewhat unique demographically since it is the home of a large shore-based processor and the demographics of the processing workforce residing in company housing at the plant site tend to overshadow the small, predominately Alaska Native population residing within the traditional community footprint.[62] In 2010, Akutan's total population was 1,027 with 5.5 percent stating they were

[62] Initially (in 1992) Akutan was deemed not eligible for participation in the CDQ program as the community was home to "previously developed harvesting or processing capability sufficient to support substantial groundfish participation

Alaska Native. The percentages of minority residents in Atka and St. George are similar to their respective percentages of Alaska Native residents, suggesting relatively homogenous populations in both communities. In Akutan, however, the population in group quarters is high (91.2 percent of all residents) and approximately 90.8 percent of residents are minority. These statistics reflect the sizable minority workforce associated with the shore-based processor in Akutan.

Economic indicators[63] in these CDQ communities show approximate per capita income between $24,000 and $27,000 annually, although median household incomes are higher in St. George ($56,250) than in Akutan and Atka ($26,750 and $55,000, respectively). The percent of the population considered low-income was 4.8 percent for St. George, which was lower than the percentages of the population in Akutan (19.0 percent) and Atka (7.8 percent).

**Table 44. APICDA Region BSAI Halibut Dependent Communities Selected Demographic Indicators**

| Community | Total Population | Alaska Native Residents (percent of total population) | Minority Residents (percent of total population) | Residents Living in Group Quarters (percent of total population) | Per Capita Income (dollars) | Median Household Income (dollars) | Number of Family Households | Median Family Income (dollars) | Low-Income Residents (percent of total population) |
|---|---|---|---|---|---|---|---|---|---|
| Adak** | 326 | 5.5% | 81.9% | 66.6% | $21,055 | $76,250 | 16 | $66,250 | 40.0% |
| Akutan | 1,027 | 5.5% | 90.8% | 91.2% | $26,978 | $26,750 | 39 | $31,875 | 19.0% |
| Atka | 61 | 95.1% | 95.1% | 0.0% | $26,500 | $55,000 | 13 | $58,750 | 7.8% |
| St. George | 102 | 88.2% | 91.2% | 3.9% | $24,201 | $56,250 | 12 | $58,750 | 4.8% |
| Unalaska** | 4,376 | 6.1% | 66.3% | 48.0% | $36,514 | $91,635 | 577 | $101,563 | 6.2% |

*Defined as those persons living below the poverty threshold by the U.S. Census Bureau in the 2013-2017 American Community Survey. As a point of reference, a family of four (two adults and two children) had a poverty threshold of $25,465 in 2018.

**Note: neither Adak nor Unalaska are member communities of APICDA, but both are within the geographic region encompassed by APICDA and both were identified by community dependency exercise as BSAI halibut dependent communities. Adak and Unalaska were the only non-CDQ communities in any region of Alaska identified as BSAI halibut dependent communities.

Source: US Census 2010; US Census 2018.

Unalaska, traditionally an Aleut community, has become a plural community with port and fisheries-related development. In 2010, the total population of Unalaska was 4,376 people, 6.1 percent of whom stated they were Alaska Native. Adak is also a relatively diverse community with a shore-based processor and is still transitioning from its days as a relatively large military base in the 1990s to a small civilian Alaskan community. Unlike all of the other communities in the region, including Unalaska, and all of the other communities analyzed as potentially substantially engaged or substantially dependent halibut communities in this document, Adak was until recently not classified as "rural" for the purposes of

in the BSAI…" though the community met other qualifying criteria. The Akutan Traditional Council subsequently initiated action to show that large industrial enclave-style development of the locally operating shore-based processor was essentially socially and economically separate and distinct from the traditional community of Akutan. With the support of APICDA and others, Akutan obtained CDQ status in 1996, becoming a member community of APICDA.

[63] Some of the social and economic data used in this document are from the U.S. Census American Community Survey (ACS). The ACS asks a broader range of questions than the decennial census and is meant to sample the entirety of the U.S. population on a range of issues. The ACS is conducted annually and the data used in this analysis is based on a 5-year aggregation of data. However, the 5-year ACS surveys approximately 1 in 12 households and this can result in substantial margins of error, particularly in smaller communities. For example, while Adak's median household income is estimated at $76,250, the margin of error is $31,246. This means that there is a 90 percent chance that the true median household income in Adak is anywhere from $45,004 to $107,496. Similarly large margins of error are present in other communities. Despite this, the ACS provides the most recent and most reliable source for these social and economic data at this time.

federal subsistence regulation[64] due to its former military status.[65] In 2010, the total population of Adak was 326 people, with 5.5 percent stating they were Alaska Native.

Adak and Unalaska both had a substantial proportion of their population living in group quarters, and the percentage of minority residents was much higher than the percentage of Alaska Native residents. Like the statistics for Akutan, these numbers can be attributed to the sizable minority workforce associated with shore-based processors in both communities.

Per capita income in these communities was substantially different, as were other economic earnings measures. In all earnings measures, Unalaska had a higher rate than Adak. For example, per capita income in Unalaska was $36,514 and $21,055 in Adak. In comparison to the nearby CDQ communities, Unalaska had higher economic indicators while Adak had a lower per capita income but higher median household income and median family income. The proportion of low-income residents in Adak was 40.0 percent, while the proportion of low-income residents in Unalaska was 6.2 percent.

## 6.1.4 Local Economy

The economy of the APICDA region is focused primarily on supporting the various regional commercial fisheries. For example, shore-based seafood processing plants are located throughout the region, including in the communities of Adak, Akutan, Atka, and Unalaska. Unalaska is the primary port in the area, serving as the base of operations for approximately 300 vessels that fish within the BSAI. Data from 2010 estimate that roughly a quarter of total landings made in Alaska that year occurred within this area, with landings of pollock and Pacific cod accounting for the majority of landings (Himes-Cornell *et al.* 2013). In general, tourism is not a primary economic driver in the communities in this area, although some sportfishing, hunting, bird watching, and eco-tourism opportunities exist.

The economic importance of commercial fishing for Unalaska cannot be overstated, as Unalaska has ranked as the number one U.S. port in volume of landings since 1992 and has ranked as second in value of landings (behind New Bedford, Massachusetts) since 2000. In recent years, employment statistics for Unalaska have shown that the top three employers in the community were seafood processing companies, and that their employees accounted for over half of all employment in the city. The support service sector for the commercial fishing fleet is by far the most developed in the BSAI region, and Unalaska and firms dependent on the fisheries, such as stevedoring and shipping, regularly rank as some of the largest employers. There is no other community in the region with the level of development or the range of services provided to the various sectors in the BSAI, which include accounting and bookkeeping, banking, construction and engineering, diesel sales and service, electrical and electronics services, freight forwarding, hydraulic services, logistical support, marine pilots/tugs, maritime agencies, gear replacement and repair, vessel repair, stevedoring, vehicle rentals, warehousing, and welding, among others (AECOM 2010; NOAA 2014).

In Adak, the former military infrastructure has facilitated the Aleut Enterprise Corporation's ability to provide services to the region, as the airport in Adak is the largest in the Aleutians and the harbor facilities consist of three deep water piers and a small boat harbor. Fuel sales and providing a convenient port for crew transfers are two ways that Adak supports the commercial fishery in the BSAI. Observer data suggest that catcher vessels regularly made embarkations and disembarkations in the community. While the data are silent on the nature of these visits to Adak, it can safely be assumed that at least a

[64] An individual must have their primary, permanent place of residence in a rural area to qualify to hunt, trap, or fish under federal subsistence regulations, with "rural" meaning any community or area of Alaska determined by the Federal Subsistence Board to qualify as such. Only residents of communities or areas that the Board has determined to be rural are eligible for subsistence priority (Coble 2015).

[65] Adak was recommended for rural status in the Rural Determinations Decennial Review published in 2006. See: https://www.doi.gov/sites/doi.gov/files/migrated/subsistence/library/policies/upload/Review2006a.pdf

portion of these port calls included crew transfers, provisioning, fueling, product offloads, and purchases of other local goods and services (NOAA 2014).

## 6.1.5 Engagement in the Commercial BSAI Halibut Fishery

### 6.1.5.1 Catcher Vessels with Local Ownership Addresses and Ex-Vessel Gross Revenues

Table 45 provides trend information on the number of vessels with ownership addresses in APICDA region communities that were active in the BSAI/Area 4 commercial halibut fisheries 2010-2018. As shown, the CDQ communities of Akutan, Atka, and St. George averaged between three and five BSAI halibut vessels annually from 2010-2018, while the non-CDQ communities of Adak and Unalaska averaged less than one and about eight vessels, respectively.

**Table 45. Individual BSAI Halibut Catcher Vessels by Community of Vessel Historic Ownership Address, APICDA Region Communities, 2008-2018 (number of vessels)**

| Region | Community | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 (number) | Annual Average 2010-2018 (percent) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APICDA | Adak* | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0.6 | 2.9% |
| APICDA | Akutan | 4 | 3 | 5 | 3 | 4 | 3 | 3 | 1 | 1 | 3.0 | 15.4% |
| APICDA | Atka | 3 | 3 | 4 | 5 | 5 | 4 | 3 | 3 | 0 | 3.3 | 17.1% |
| APICDA | Saint George Island | 3 | 6 | 6 | 4 | 6 | 5 | 5 | 4 | 5 | 4.9 | 25.1% |
| APICDA | Unalaska/Dutch Harbor* | 10 | 9 | 9 | 8 | 6 | 7 | 7 | 5 | 8 | 7.7 | 39.4% |
| **APICDA** | **Regional Subtotal** | **21** | **22** | **25** | **21** | **21** | **20** | **18** | **13** | **14** | **19.4** | **100.0%** |

*Denotes communities within a CDQ region that are not themselves CDQ communities.

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Beyond these averages, Adak had no vessels active in the fishery in the four out of the five most recent years for which data are available (and none in the three most recent years for which data are available); Akutan has declined to a single vessel in the most recent two years for which data are available; and Atka did not have any vessels in the most recent year for which data are available. The apparent causes of these declines vary by community.

Adak has reportedly had challenges with stability in the local processing sector. Recent (July 2019) interviews in Akutan suggest that quota held by multiple local residents has been fished off a combination of a single local resident-owned vessel and another vessel or other vessels with ownership addresses outside the community but whose owner(s) have kinship or other long-standing relationships with the community rather than on more vessels with local ownership addresses. This pattern was attributed to a set of circumstances particular to the vessels involved rather than movement of quota or vessels out of the community but none-the-less represents a change in local fishery engagement patterns.

Atka has experienced the closure of Atka Pride Seafoods, the local processing plant that was a 50/50 joint venture between APICDA and the Atka Fishermen's Association. It was not open in 2018 (nor is open in 2019) due to a combination of factors including lowered halibut quotas, competition with the processing operation in Adak, and other factors not directly related to fishing conditions, according to APICA

leadership. As in interim[66] measure during the non-operation of the local processing plant, APICDA has fostered a substitute opportunity program for Atka fishermen to fish their quota off a single larger vessel (rather than their smaller individually owned vessels) which has additional safety advantages under conditions of lower halibut abundance that can mean longer trips farther offshore, with the deliveries of the catch being made primarily to Adak, but in some instances to Unalaska/Dutch Harbor and/or Akutan, also according to APICDA leadership.

Information on BSAI halibut ex-vessel gross revenues of vessels with ownership addresses in the regional communities, to the extent possible within confidentiality constraints, is provided in Table 33. As shown, these revenues varied widely by community ($63,000 [Akutan] to $1.7 million [Unalaska/Dutch Harbor] on an annual average basis for those individual communities for which data can be disclosed, with the remaining communities [Adak and Atka combined and St. George] having $359,000 and $172,000 in average annual halibut ex-vessel revenues, respectively). Information on BSAI halibut vessel diversity, as measured by relative dependency on halibut ex-vessel revenues compared to the total ex-vessel revenues for all species, gear, and area fisheries pursued by those same vessels on an annual average basis 2010-2018, is provided in Table 34. As shown in that table, levels of halibut dependency range from 38 percent to 89 percent for the vessels involved in the halibut fishery.

For that same 2010-2018 period, Table 35 shows the annual average number of BSAI halibut catcher vessels with local ownership addresses, the annual average number all commercial fishing catcher vessels (all species, gear, and area fisheries) with local ownership addresses (i.e., the local "community commercial fishing fleet"), BSAI halibut ex-vessel gross revenues for the community commercial fishing fleet, total ex-vessel gross revenue for the commercial fishing fleet (from all species, gear, and area fisheries), and the percentage of halibut ex-vessel gross revenues as a percentage of the total ex-vessel gross revenues of the community commercial fishing fleet (i.e., the "dependency" of the community fleet on BSAI halibut as measured in the proportion of ex-vessel revenues derived from that fishery). For three of the four communities (or groups of communities), the halibut fleet is essentially the community commercial fisheries fleet, such that dependency does not change (that is, it still ranges from 38 percent [Akutan] to 80 percent [Adak/Atka combined] to 89 percent [St. George]. In the case of Unalaska/Dutch Harbor, the vessels active in the halibut fishery were 56 percent dependent on that fishery alone, with the Unalaska/Dutch Harbor "community fleet" as a whole were 36 percent dependent on halibut ex-vessel revenues alone. This community fleet level dependency was, by far, the highest among communities shown in Table 35 with halibut ex-vessel values greater than $1 million.

### 6.1.5.2 Other Measures of CDQ Community, Unalaska, and Adak BSAI Halibut Harvest Engagement

In addition to catcher vessel–related activity, engagement in and dependency on the BSAI halibut harvest sector can be gauged in part by looking at the number of individuals holding quota shares in the halibut fishery, although this information is complicated by the fact that some CDQ community fleets participate in the fishery to greater or lesser degrees through the use of CDQ quota, which is further complicated by the fact that percentage of quota held as CDQ reserves in the different subareas of Area 4 varies from none (Area 4A) to 100 percent (Area 4E). Nonetheless, the level of quota shareholding in a community is typically indicative of one type of engagement in the halibut fishery.

**As shown in**

Table 46, APICA communities with local ownership of halibut quota shares include communities in three different IPHC management subareas within Area 4 (Areas 4A, 4B, and 4C) and one in Area 3 (Area 3B).

[66] According to APICDA leadership, as of August 2019, plans to reopen the plant are being actively explored, but no firm timeline has been established. Earlier Council analyses noted that the potential for diversification of the plant through crab processing was being explored and, according to APICDA leadership, that is still the case.

As noted in the table and the bulleted notes that follow, the nature, level, and area diversity of halibut quota share holding varies widely between the communities.

**Table 46. Halibut Quota Share Holders and Quota Share Units Held, APICDA Region Communities, 2019**

| Community | Community Located in IPHC Area | Number of Unique Quota Share Holders | Total Quota Share Units Held | Percent of QS Units Held in Region |
|---|---|---|---|---|
| Adak | 4B | 1 | 1,196,304 | 23.92% |
| Akutan | 4A | 8 | 273,563 | 5.47% |
| Atka | 4B | 8 | 418,656 | 8.37% |
| False Pass | 3B | 3 | 386,123 | 7.72% |
| St George | 4C | 3 | 32,783 | 0.66% |
| Unalaska/Dutch Harbor | 4A | 20 | 2,693,016 | 53.86% |
| **Regional Total** | | **43** | **5,000,445** | **100.00%** |

Source: https://www.fisheries.noaa.gov/sites/default/files/akro/19ifqunitfb.csv. Accessed 8/14/19

Compared to other CDQ regions, halibut quota share holdings within the APICDA region are relatively diversified.

- Communities in the APICDA region span four different IPHC regulatory areas (see Figure 1).
    - Akutan and Unalaska/Dutch Harbor are the only communities in Area 4A, which does not have a CDQ reserve.
    - Adak and Atka are the only communities in Area 4B, which has a 20 percent CDQ reserve that is 100 percent allocated to APICDA.
    - St. George is one of two communities in Area 4C, which has a 50 percent CDQ reserve that is allocated 15 percent to APICDA and 85 percent to CBSFA. St. Paul, the other community in Area 4C, is the sole member of the CBSFA CDQ entity.
    - False Pass is in Area 3B, which is located within the federal Gulf of Alaska management area (rather than the BSAI management area). Area 3B and does not have a CDQ reserve.
- All quota shares held in Adak are held by the Adak Community Development Corporation (ACDC), the only Community Quota Entity (CQE) outside of the Gulf of Alaska. ACDC held quota shares are all in Area 4B. Adak is not a CDQ community.
- All quota shares in Akutan are held by individuals and all shares held are in Area 4A.
- All quota shares in Atka are held by individuals. Seven individuals hold Area 4B shares exclusively and one individual holds Area 3B shares and CDQ flagged[67] shares in Area 4A.

[67] CDQ flagged shares represent CDQ compensatory shares that were automatically issued to qualified individuals as compensation for the potential loss of fishing history that would have otherwise qualified for IFQ but for the CDQ program. These compensatory shares were issued in IPHC regulatory areas that did not have CDQ reserves (i.e., Areas 2C, 3A, 3B, and 4A). The intent, according to those involved with the process, was not for those individuals who were awarded CDQ compensatory shares to actually fish those shares, rather, the intent was that the CDQ compensatory shares could be sold and the proceeds of those sales would then serve as compensation for the potential loss of fishing history that would have otherwise qualified for IFQ but for the CDQ program. When CDQ compensatory shares are sold, the CDQ flag is removed from the shares in the data, so any remaining shares so flagged in the data are still held by the individual to whom they were originally issued. Any individuals shown in the data holding quota share units in Area 4E, which has a 100 percent CDQ reserve, did not qualify for compensatory

- All quota shares in False Pass are held by individuals and all are in Area 3B.
- All quota shares in St. George are owned by individuals. Two individuals hold Area 4C shares exclusively and one individual holds Area 4C shares plus CDQ flagged shares in Areas 2C, 3A, 3B, and 4A.
- All quota shares held in Unalaska/Dutch Harbor are held by individuals, with the holdings varying more widely across IPHC regulatory areas than is typical in other communities, regardless of CDQ region. 12 individuals hold Area 4A shares exclusively; two hold Area 4A and 4B shares; one holds Area 4A and 4E shares; one holds Area 4A, 4C, and 4D shares; two hold Area 4B shares exclusively; one holds Area 4A and 3A shares; and one holds Area 4A and 3B shares. Unalaska/Dutch Harbor is not a CDQ community (but is an ex-officio/non-voting member of APICDA).

Another important way that communities are engaged in the commercial halibut fishery harvest sector, beyond local individuals owning vessels active in the fishery or holding halibut quota share units, is through employment of local residents as crew members on vessels participating in the fishery. As noted in Section 4.5.2, however, sources of systematically collected quantitative data on crew employment and earnings are not available for the halibut fishery in this or other regions.

### 6.1.5.3 Shore-Based Processors and First Wholesale Gross Revenues

As shown in Table 36, shore-based processors in Adak, Akutan, Atka, False Pass, and Unalaska/Dutch Harbor accepted BSAI halibut deliveries every year during the period 2010-2018, with two exceptions, when neither Atka nor False Pass accepted any deliveries in 2018. In the case of Atka, the local shore-based processing plant did not operate in 2018, as noted above, while in False Pass, the processing plant had recently changed ownership structure and in 2018 exclusively focused on salmon. The average number of processors accepting BSAI halibut was greater than one in Unalaska/Dutch Harbor (2.3) and Adak (1.6).

As noted in Section 4.5.3, first wholesale gross revenue data for shore-based processors sufficient to calculate processing diversity are not available. For the reporting of ex-vessel value of deliveries of BSAI halibut to shore-based processors, plants in Unalaska/Dutch Harbor and Akutan were grouped together and plants in the APICDA region communities of Adak, Atka, and False Pass were grouped with St. Paul from the CBSFA region due to data confidentiality restrictions. As shown in Table 37, on an annual average basis, shore-based processors in Unalaska/Dutch Harbor and Akutan combined accounted for over half of all ex-vessel gross revenues of BSAI halibut deliveries to shore-based processors, while the plants in Adak, Atka, False Pass, and St. Paul combined accounted for over one-quarter of the total. Together, these two groups of communities accounted for approximately 82 percent of the all ex-vessel gross revenues of BSAI halibut deliveries to shoreplants in all regions combined.

As shown in Table 39, however, annual average ex-vessel gross revenues of BSAI halibut landings at Unalaska/Dutch Harbor and Akutan plants combined ($14 million) accounted for about four percent of all ex-vessel gross revenues of the landings of all species at all shore-based processors in those communities combined ($331 million). As shown in that same table, annual average ex-vessel gross revenues of BSAI halibut landings at Adak, Atka, False Pass, and St. Paul plants combined ($7 million) accounted for about 16 percent of all ex-vessel gross revenues of the landings of all species at all shore-based processors in those communities ($40 million).

shares. As there is no Total Allowable Catch (TAC) set in 4E, those shares are not issued quota pounds (i.e., they cannot be fished and typically have no sale value).

## 6.1.6 Engagement in the Subsistence BSAI Halibut Fishery

As described in an earlier NPFMC analysis (AECOM 2015)[68] for those APICDA region communities for which subsistence data were available, including Unalaska and Adak, the community with the largest number of estimated halibut subsistence fishermen was Unalaska, with an average of 56.3 fishermen reported for the city and 13.3 reported for the tribal village from 2009-2012. The average number of halibut landed for 2009-2012 was 608.3 and 91.3, representing an estimated 9,829.8 and 1,382.3 pounds for the city and tribal village, respectively, making Unalaska, by this measure, easily the community most heavily engaged in the subsistence halibut fishery among all communities for which information is available. For the communities of Adak, Akutan, Atka, and St. George, the total number of estimated halibut fishermen was under 10 for each community for each year, with proportionally fewer halibut landed compared to Unalaska.

ADFG's Division of Subsistence has collected comprehensive subsistence harvest information for at least some years for key subsistence species across many Alaskan communities. While in many cases these data are dated (e.g., 1994 is the most recent year available for Atka, St. George, and Unalaska), they still represent the most comprehensive data encompassing all subsistence resources available that is comparable across regions. These data are accessible through the Community Subsistence Information System and include information on percentage of households using the subsistence species, estimated total harvest, and, for some fish species, amount of subsistence harvest retained from commercial fisheries, among other variables. Table 47 presents selected information for the potentially substantially engaged or substantially dependent halibut communities in the APICDA region as selected by initial screening criteria. Of those communities for which there are data, each has 85 percent of households using subsistence halibut, although the number of pounds harvested per community varies widely between communities and, in the case of Akutan, between study years. The percentage of halibut of all subsistence fish harvested is especially high in St. George, while the percentage of retention of subsistence halibut from commercial fishing is relatively high in Akutan. No data are available for Adak (likely due to the fact that Adak, a former military installation, was only relatively recently classified as rural for the purposes of subsistence resource management, as noted in Section 6.1.3).

**Table 47. Selected CSIS Halibut, Fish, and All Resources Subsistence Harvest Information, APICDA Region Communities, Various Years**

| Community | Year(s) Data Are Available | Percent Using Halibut | Percent Harvesting Halibut | Halibut Reported Pounds Harvested | Halibut Estimated Total Pounds Harvested | All Fish Estimated Total Pounds Harvested | Halibut as a Percentage of Estimated Total Pounds of All Fish Harvested | All Resources Estimated Total Pounds Harvested | Halibut as a Percentage of Estimated Total Pounds of All Resources Harvested | Estimated Pounds of Subsistence Halibut Harvested Retained from Commercial Fisheries | Subsistence Halibut Estimated Total Pounds Harvested Retained from Commercial Fisheries |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Adak | none | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Akutan | 1990 | 100.0% | 80.0% | 7,007 | 8,689 | 26,921 | 32.3% | 47,397 | 18.3% | 2,200 | 25.3% |
| Akutan | 2008 | 86.1% | 50.0% | 3,794 | 4,216 | 18,636 | 22.6% | 26,909 | 15.7% | no data | -- |
| Atka | 1994 | 85.7% | 53.6% | 3,576 | 3,704 | 15,152 | 24.4% | 37,307 | 9.9% | 321 | 8.7% |
| St. George | 1994 | 100.0% | 47.2% | 3,320 | 4,611 | 5,444 | 84.7% | 11,330 | 40.7% | 906 | 19.6% |
| Unalaska | 1994 | 90.8% | 55.8% | no data | 108,207 | 245,876 | 44.0% | 355,081 | 0.0% | 10,606 | 9.8% |

Source:ADFG Community Subsistence Information System https://www.adfg.alaska.gov/sb/CSIS/index.cfm?ADFG=harvInfo.harvestCommSelComm accessed 8/21/2019.

As part of the AFSC's most recent compilation of baseline socioeconomic community profiles, researchers compiled subsistence data from ADFG Division of Subsistence reports, U.S. Fish and

[68] See Table 2-8 in that analysis (Proposed Bering Sea/Aleutian Islands Halibut PSC Limit Revisions Appendix C: Community Analysis).

Wildlife Service reports, and other published quantitative data. AFSC researchers also elicited qualitative information from some civic leaders via a survey regarding their community's most important subsistence species.[69]

- In Adak, household participation is unavailable, but community leaders have stated that salmon (sockeye), halibut, crab, seal, sea lion, duck, and geese are important subsistence species. In 2009, 26 residents were registered with a SHARC to fish subsistence halibut, compared to only six residents with a SHARC in 2003. In 2009, an estimated 377 pounds of halibut was harvested on four SHARC cards, compared to 687 pounds harvested on six SHARC cards in 2003. The peak year for subsistence halibut use during the period of available information was in 2008 when 3,058 pounds were harvested on 12 SHARC cards. Between one and 12 subsistence salmon permits have been issued to Adak residents annually from 2000 through 2008; the total number of salmon harvested as reported on returned permits ranged from 75 fish to 465 fish. The number of seals, sea lions, and otters harvested annually from 2000 through 2010 ranged from five animals to 17 (all species combined).
- In Akutan, 2011 AFSC survey reported that according to community leaders the most important subsistence species are seals, ducks, and salmon. The most recent Alaska Department of Fish and Game survey, in 2009, stated that 80 percent of the subsistence harvests in Akutan were comprised of salmon, non-salmon fish (including halibut), and marine invertebrates. The AFSC community profile with data through 2010 estimated that three or fewer subsistence salmon permits were issued in each year and that 30 or fewer salmon were harvested; this would suggest that non-salmon species are a key part of the marine subsistence harvest. Residents were issued 16 SHARC cards in 2010, down from 50 in 2003. The number that fished for halibut was at a low of three in 2010, down from 47 in 2005. Subsistence halibut catch was at a peak estimate of 15,000 pounds in 2005 but totaled only 790 in 2010 (the only year during the period when catch was estimated at fewer than 3,000 pounds). The 2009 ADFG survey found that marine mammals accounted for 8% of subsistence harvests while land mammals, birds, eggs, and wild plants made up 12%. Marine mammal harvest consisted mainly of seals and sea lions, with the harvested number ranging from four to 30 in a year.
- In Atka, community leaders stated that fish, marine birds, terrestrial birds, terrestrial mammals, and local vegetation are the most important subsistence resources. The number of SHARC cards issued for halibut dropped from 13 in 2003 to 1 in 2010. Between four and nine of those SHARC holders reported fishing in 2003 through 2005, and no data were returned from 2006 through 2010. During those three reported years, SHARC harvest ranged from 795 pounds to 1,625 pounds. The data available in AFSC's most up-to-date profile indicate that subsistence salmon and marine mammal harvest either go unreported, only account for a small part of subsistence use, or are not a part of subsistence use. An important on-land source of wild food is a herd of several thousand reindeer.
- In St. George, community leaders stated that fur seals, halibut, and Pacific cod are the most important subsistence resources. The most recent AFSC profile noted that around 500 fur seals are harvested each year for subsistence purposes. Data were available during the 2000-2010 period regarding annual subsistence harvest of halibut. Between 2003 and 2010, the number of SHARC cards issued by NMFS decreased from 31 to 4. In 2010, 14 of the 26 SHARC cards issued that year were reported as actively fished, for a total of 686 pounds of halibut harvested that year. This total represents a large decrease from 2007, when 3,736 pounds of halibut were harvested on 14 active SHARC cards.

[69] Although AFSC has done profiling work on communities in recent years, the information available for many communities is still dated as surveys and field research have not been newly conducted in all communities.

- In Unalaska, community leaders stated that the most important subsistence resources included sockeye salmon, halibut, coho salmon, and crab, while the subsistence harvest of marine mammals has declined substantially over the past few decades. (Himes-Cornell *et al.* 2013). In 2008, the most recent year for which data were available for salmon harvesting, there were 199 subsistence salmon permits issued to Unalaska residents, a value which ranged from 172 subsistence salmon permits issued in 2007 to 226 permits issued in 2002. In 2008, 158 of the subsistence salmon permits were reported as fished. Subsistence harvest of all salmon species ranged between 3,000 and 7,000 fish, with sockeye salmon accounting for the vast majority. Between 2003 and 2009 the number of SHARC cards held and actively fished by residence increased, but in 2010 the number of SHARCs held, used, and pounds harvested all decreased substantially. In 2010, ADFG estimated 12,610 pounds of halibut harvest from 55 SHARCs, compared to 29,306 harvested on 76 SHARCs in 2009.

## 6.1.7 Engagement in the Commercial BSAI Groundfish Fishery

### 6.1.7.1 Catcher Vessels with Local Ownership Addresses and Ex-Vessel Gross Revenues

Activity of BSAI groundfish catcher vessels with local ownership addresses during the period 2010-2018 was limited to the BSAI groundfish hook-and-line catcher vessels and to the communities of Adak and Unalaska. During this period, one BSAI groundfish hook-and-line catcher vessel with an Adak ownership address participated in the fishery in 2013 (Table 15). All ex-vessel gross revenue information related to this catcher vessel activity is confidential.

Three BSAI groundfish hook-and-line catcher vessels with Unalaska/Dutch Harbor ownership addresses participated in the fishery in each year in 2010-2011 and 2013-2015; five did so in 2012. None participated in 2016 and 2017; one did so in 2018 (Table 15). Ex-vessel gross revenue data are confidential for 2012 and 2018, with combined gross revenues for non-zero and non-confidential years ranging between $0.14 million and $0.97 million (Table 16). As shown in Table 17, on an average annual basis, among catcher vessels with Unalaska/Dutch Harbor ownership addresses participating in the hook-and-line groundfish fishery, ex-vessel gross revenues from that fishery accounted for about 25 percent of all ex-vessel gross revenues (all area, gear, and species fisheries) for those same vessels on an annual average basis 2010-2018. As shown in Table 18, for all commercial fishing vessels with Unalaska/Dutch Harbor ownership addresses (i.e., the "community commercial fishing fleet") BSAI groundfish hook-and-line ex-vessel gross revenues accounted for about six percent of all ex-vessel gross revenues (all area, gear, and species fisheries) for the combined community commercial fishing fleet on an average annual basis 2010-2018.

### 6.1.7.2 Shore-Based Processors, Ex-Vessel Gross Revenues, and First Wholesale Gross Revenues

Shore-based processors accepting relevant BSAI groundfish deliveries during the period 2010-2018 operated in Adak, Akutan, Atka, False Pass, and Unalaska/Dutch Harbor. Three or four BSAI groundfish shore-based plants operated in Unalaska/Dutch Harbor in each year, while one BSAI groundfish shore-based plant operated Akutan every year. These are large, multi-species for which BSAI groundfish is central focus of operations.

One shore-based processing plant in Atka is shown in the data as having participated in the BSAI groundfish fishery all but two years 2010-2018 (2015 and 2018). However, the recent Amendment 113 analysis (December 2018) indicated that Aleutian Islands Pacific cod deliveries to the Atka plant were

limited to incidental catch from a different target fishery as the plant otherwise focused exclusively on halibut and sablefish, which are produced in H&G (headed and gutted) and fillet product forms. As noted in Section 6.1.5, the Atka plant did not operate in 2018 and its future is uncertain.

One shore-based processing plant in Adak is shown in the data as having participated in the BSAI groundfish fishery all but two years 2010-2018 (2015 and 2017). While there is a single physical plant in the community, the level of ownership/operational change over this time period may be seen in the number of unique entities (five) processing in the community over this time span (Table 23). Unlike Atka, however, recent Council analyses (e.g., Wislow Research 2019) have indicated that the Adak plant, when operating, is substantially engaged in and substantially dependent upon BSAI groundfish and specifically Pacific cod.

The only other BSAI groundfish shore-based processing activity in the APICDA region 2010-2018 was limited to one shore-based processor in False Pass that accepted one or more deliveries of BSAI groundfish in 2015 only, but the community has recently seen a substantial increase in processing capacity and diversity, including an increased focus on BSAI groundfish. The established plant in the community has been greatly expanded, following Trident Seafoods acquiring majority interest in the facility (and APICDA, the former owner/operator of the plant retaining a minority interest). While the Trident/APICDA plant, according to the Trident website "processes all species of salmon into frozen H&G pack,"[70] a new Silver Bay Seafoods plant, scheduled to open for the 2019 fishing season, has been constructed and is noted on that company's website as being in "a favorable geographic position to process salmon, pollock, and cod delivered … from both the Gulf of Alaska and Bering Sea."[71] According to APICDA leadership, when the False Pass Trident/APICDA plant was owned exclusively by APICDA, halibut deliveries were routinely accepted and the new managing partner in the plant has shown an openness to the potential of integrating the processing of halibut and other BSAI whitefish into plant operations in the future.

As noted in Section 4.5.3, ex-vessel gross revenues are used as a proxy for the typically more appropriate first wholesale gross revenues for relative distribution of shore-based processing activities across communities due to limitations of available first wholesale gross revenue data. Ex-vessel gross revenue data associated with deliveries at shore-based processors in individual communities in the region are confidential for every year 2010-2018. As shown in Table 24, shore-based processor ex-vessel expenditure data for relevant BSAI groundfish deliveries to Unalaska/Dutch Harbor and Akutan shore-based processors had combined accounted for over 80 percent of all such expenditures by all plants in all communities.

As shown in Table 26, however, annual average ex-vessel expenditures for relevant BSAI groundfish landings at Unalaska/Dutch Harbor and Akutan plants combined ($23 million) accounted for about seven percent of all ex-vessel gross revenues of the landings of all species at all shore-based processors in those communities combined ($331 million). In other words, while the level of expenditure is by no means negligible, the relative level of dependency of those large plants on the relevant groundfish deliveries (from the TLAS, hook-and-line, and CDQ sectors) as gauged by ex-vessel expenditures is relatively modest. As shown in that same table, annual average ex-vessel expenditures on relevant BSAI groundfish landings at all processors in all other Alaska communities combined that had at least one landing of relevant BSAI groundfish landing during this period accounted for less than one percent of all ex-vessel expenditures for all deliveries for all species, gear, and area combined.

[70] https://www.tridentseafoods.com/Our-Story/Our-Plants accessed 8/19/2019.

[71] https://www.silverbayseafoods.com/ accessed 8/19/2019.

## 6.1.8 CDQ Group Direct BSAI Halibut and/or Groundfish Engagement

In addition to participating in the BSAI halibut and/or BSAI groundfish fisheries through use of CDQ quota ownership in a number direct and indirect of ways APICDA, like other CDQ entities, has also invested in capital assets in the catcher vessel and/or catcher/processor sectors as another avenue to meet the economic and social goals of the CDQ program. Among vessels shown in the dataset used for analysis as actively participating in the sectors of the BSAI groundfish fishery relevant to this analysis in at least one year 2010-2018, 11 of those were listed in the most recent CDQ ownership attribution Regulatory Impact Review (RIR) (NMFS 2017) as owned at least in part by APICDA. These vessels are listed in Table 48 and, as noted, APICDA does not currently have an ownership interest in all of these vessels. [72]

**Table 48. CDQ Ownership of Vessels Participating in Relevant BSAI Groundfish Sectors, APICDA, 2010-2018**

| | ADFG Number | Vessel Name | CDQ Group | CDQ Ownership |
|---|---|---|---|---|
| 1 | 44971 | BARBARA J | APICDA | 50% |
| 2 | 77470 | BERING PROWLER | APICDA | 25% |
| 3 | 47952 | EXCELLER* | APICDA | 100% |
| 4 | 35687 | GOLDEN DAWN | APICDA | 25% |
| 5 | 39369 | GULF PROWLER | APICDA | 25% |
| 6 | 43570 | OCEAN PROWLER | APICDA | 25% |
| 7 | 69625 | KONRAD* | APICDA | 100% |
| 8 | 62424 | FARWEST LEADER* | APICDA | 70% |
| 9 | 57621 | STARBOUND | APICDA | 20% |
| 10 | 40920 | PROWLER* | APICDA | 25% |
| 11 | 8522 | U S LIBERATOR* | APICDA | 20% |

*APICDA no longer has an ownership interest in these vessels, according to APICDA leadership in 2019. Four of these vessels have changed names since NOAA 2017: Exceller is now Bruin, Konrad is now Scotch Cap, Farwest Leader is now Siberian Sea, and Prowler is now Titan Explorer.
Note (1): Vessel ownership addresses include Anchorage/Girdwood AK (1), Petersburg AK (1), Seattle WA (8), and Columbia OR (1).
Note (2): Each of the listed vessels participated in one or more of the BSAI groundfish TLAS catcher vessel, hook-and-line catcher/processor, and/or CDQ sectors during at least one year 2010-2018.
Source: NOAA 2017, AKFIN 2019.

Other APICDA ownership interests in the sectors relevant to the proposed action, as listed on their website,[73] include the following:

[72] In addition, some CDQ groups from outside the APICDA region may be involved as owners of or partners in entities located in the APICDA region that were direct participants in the BSAI groundfish fishery sectors that would potentially be impacted by one or more of the proposed management alternatives analyzed in this SIA. For example, it is common knowledge that NSEDC was directly engaged in the shoreside processing sector as a partner in a processing entity with a facility that operated in Unalaska/Dutch Harbor and accepted BSAI groundfish deliveries in at least some years in or around 2011-2014.

[73] https://www.apicda.com/ accessed 8/16/2019.

- Atka Pride Seafoods, which owns and operates the shore-based processing plant in Atka, is a 50/50 partnership between APICDA Joint Ventures and the Atka Fishermen's Association.
- APICDA Joint Ventures has retained a 25 percent interested in False Pass Seafoods (formerly Bering Pacific Seafoods) and False Pass Fuel Services, while Trident Seafoods is now the managing partner and holds the balance of ownership interest.
- Prowler Fisheries, LLC is a 25/25/25/25 partnership between APICDA Joint Ventures and three other entities, with APICDA Joint Ventures serving as the managing partner. The fleet of five[74] vessels, inclusive of the F/LL Prowler, F/ LL Ocean Prowler, F/LL Bering Prowler, F/LL Gulf Prowler and F/LL Arctic Prowler, are longline catcher/processors that harvest and process Pacific cod and sablefish in the Bering Sea and Gulf of Alaska.

# 6.2 Central Bering Sea Fishermen's Association Region

## 6.2.1 Location

The CBSFA is a CDQ entity that represents the community of St. Paul, located in the Pribilof Islands. The CBSFA is unique among CDQ groups as it is the only entity that has one community as its sole member. As identified through initial screening criteria, BSAI communities potentially substantially engaged in or dependent upon the BSAI/Area 4 halibut fishery include St. Paul.

## 6.2.2 Historic Overview

Saint Paul's population is predominantly Unangan Aleut. Historically, the Aleuts traveled to the Pribilof Islands seasonally for hunting. Inspired by traditional Aleut stories, Gavriff Pribilof of the Russian fur trading company, Lebedov Lastochkin Co., went on a search for the legendary "Seal Islands." After three years, Pribilof landed on Saint George Island in 1786, and named the island after his vessel. The following year, Pribilof and his party landed on the larger island to the north, which was named 'Saint Peter and Saint Paul Island' in honor of the day they made landfall – the Feast of Saints Peter and Paul. It is now known simply as Saint Paul Island. In 1788, the Russian American Company enslaved and relocated Aleuts from Siberia, Atka, and Unalaska to the Pribilofs to hunt fur seals. Their descendants continue to live on these two islands today (Himes-Cornell *et al*. 2013).

After the United States purchased Alaska from Russia in 1867, the U.S. government leased sealing rights to private companies, ultimately taking direct control of the fur seal harvest in 1910. During World War II, Aleut residents in St. Paul (and St. George) were relocated to Funter Bay on Admiralty Island as part of the emergency evacuation of residents from the Bering Sea. Aleut residents returned post-war; however, the commercial fur seal harvest was ended in 1985 and the economy of St. Paul transitioned to focus on commercial seafood processing and support services for the commercial fishing fleet (Himes-Cornell *et al*. 2013).[75] The local commercial halibut fishery got its start in 1981, and a Trident Seafoods crab processing plant was built in 1989 (APIA 2019).

[74] According to APICDA leadership in August 2019, this number should be four as APICDA no longer has ownership interest in the F/LL Prowler.

[75] In a number of ways, St. Paul may be seen as still under transition from a federal government institution-based community and economy to a more typical "civilian" community and economy, like Adak, but with the transition in St. Paul occurring over a longer period of time and with a continuously present local population experiencing the transition. In 1983, Congress passed the Fur Seal Act Amendments, which ended government control of the commercial seal harvest (which had effectively been the only local economic driver for over 100 years) and the effective federal domination of daily life on the island. Some transition funding was provided to promote the local development of a self-sufficient, enduring, and diversified economy not dependent on commercial sealing, and most of the funding was used to upgrade inadequate community infrastructure, including major investments in the harbor, but this funding proved

According to a survey conducted by the AFSC in 2011, Saint Paul community leaders reported that fisheries are the primary economic driver in Saint Paul and emphasized the importance of fish and crab processing to the local economy. Saint Paul is a port for the Central Bering Sea fishing fleet, and major harbor improvements have fueled economic growth. Several offshore processors are serviced out of Saint Paul, and shore-based processing operations include crab, cod, and halibut. The CBSFA operates a cooperative in conjunction with the F/V Saint Paul, Trident Seafoods, and American Seafoods. Trident Seafoods is one of the top local employers. A number of local residents are also involved in commercial fisheries as vessel owners, permit and quota share accountholders, and crew license holders (Himes-Cornell *et al*. 2013).

Saint Paul is incorporated as a 2nd Class City governed by a mayor and a city council and is not located within an organized borough (Table 49). Saint Paul was included under the ANCSA and is federally recognized as a Native Village. The traditional government, recognized by the BIA, is the Aleut Community of Saint Paul Island. The Tribe is combined with Saint George as the "Pribilof Islands Aleut Communities of Saint Paul and Saint George Islands." The Native village corporation for the Aleut Community of Saint Paul Island is the Tanadgusix Corporation (TDX), which manages land and owns several subsidiary companies that provide services to commercial, industrial, and public sectors. Many members of the Aleut Community of Saint Paul Island are also shareholders in the Aleut Corporation, the regional ANCSA corporation of the eastern Alaska Peninsula, Aleutian Islands, and Pribilof Islands (Himes-Cornell *et al*. 2013).

**Table 49. Community Institutional Summary (CBSFA CDQ Community of St. Paul)**

| Community | Borough | ANCSA Regional Corporation | ANCSA Village Corporation | Tribal Government | Municipal Government |
|---|---|---|---|---|---|
| St. Paul | Unorganized | Aleut Corporation | Tanadgusix Corporation (TDX) | Saint Paul Island | City of St. Paul |

## 6.2.3 Demographics

Demographic and socioeconomic characteristics for St. Paul are presented in Table 50. With a predominantly Alaska Native population, St. Paul is geographically and socioculturally a part of the Aleutian Pribilof Islands region (and heavily involved in the regional Aleut Corporation and the Aleutian Pribilof Islands Association [APIA]), St. Paul has the largest number of Aleut residents of any community in the larger Aleutian Pribilof Islands region and is the only CDQ community in that larger region that is not a part of APICDA. Like a number of other communities in the Aleutian Pribilof Islands geographic region, St. Paul is home to shore-based processor and the total population can fluctuate substantially over the course of a year depending on the level of processing activity in the community.

inadequate over the longer term. Federal withdrawal took place without commercial sealing continuing at least for some time during a transitional phase-out period, state assumption of the harbor project, or substantial continuing funding available for economic development and diversification, all key assumptions for a self-sustaining local economy (EDAW/AECOM and Northern Economics 2008). It was during this time that the local commercial halibut fishery, which got its start in 1981, became a central focus of local fishery-based economic development efforts (which were later substantially bolstered by the CDQ program), a position it retains to date (along with local seafood processing capacity that is self-sustaining over the long term, materially aided by regionalization community protection measures incorporated into the BSAI crab rationalization program, which also serves to benefit the local halibut fleet as discussed in Section 6.2.4).

**Table 50. CBSFA Region BSAI Halibut Dependent Communities Selected Demographic Indicators**

| Community | Total Population | Alaska Native Residents (percent of total population) | Minority Residents (percent of total population) | Residents Living in Group Quarters (percent of total population) | Per Capita Income (dollars) | Median Household Income (dollars) | Number of Family Households | Median Family Income (dollars) | Low-Income Residents (percent of total population) |
|---|---|---|---|---|---|---|---|---|---|
| St. Paul | 479 | 82.3% | 89.4% | 5.0% | $35,855 | $63,571 | 83 | $74,375 | 12.7% |

*Defined as those persons living below the poverty threshold by the U.S. Census Bureau in the 2013-2017 American Community Survey. As a point of reference, a family of four (two adults and two children) had a poverty threshold of $25,465 in 2018.
Source: US Census 2010; US Census 2018.

## 6.2.4 Local Economy

The primary economic sector in St. Paul is the commercial fishing industry. A major shore-based processor is active in St. Paul and many other businesses are located in the community that provide services to the resident and visiting commercial fleets. The top employer in the community is Trident Seafoods (owners of shore-based seafood processing plant). Other major employers include city and tribal governments and Alaska Native corporations. The fur seal rookeries and more than 210 species of nesting birds attract some tourists to the island (Himes-Cornell *et al.* 2013).

The Trident plant has historically relied primarily on crab, including opilio and king crab, with some bairdi processed as well, including during times when it may fill in what would otherwise be gaps in processing activity. Trident has previously reported that cod was also processed, typically during opilio season, although the amount of cod processed per season varied from one year to another. More recently cod processing has not been common, reportedly for a combination of reasons including market conditions, the expense of shipping product from St. Paul, and seasonal processing plant outfall constraints. The local fleet does not participate directly in the crab fishery and is focused nearly exclusively on BSAI halibut (as described below). However, without heavy participation by the shore-based processor in the crab fisheries, there is a concern that the underpinning of processing for the local halibut fishery would be removed.

According to senior CBSFA personnel, to ensure predictable/sustainable processing and marketing of locally caught halibut, CBSFA and Trident have entered into an agreement that involves sharing of halibut processing and marketing costs in proportion to the amount of halibut received at the plant via CBSFA/the local fleet versus halibut delivered to the plant by other suppliers, ensuring the viability of the operation during what are otherwise slow months for the plant. CBSFA determines the local opening date for halibut processing, which typically has run from around June 20 through September, but with changing water temperatures has opened earlier in June in recent years. While the plant only employs an estimated 30-50 persons during halibut processing, depending on deliveries, (compared to an estimated 300-400 employees during crab processing) it does provide employment for at least some locals wishing to retain fisheries-related employment without going to sea.

The plant also provides services to the community through having a galley and a store that is open to the public and provides a processing option to non-CBSFA/non-local IFQ fishery vessels targeting halibut in the area. According to CBSFA management, Trident has partnered with the community to keep the plant open to support the local halibut fishery (and the community at large via the other services provided when the plant is open), while the custom processing and shared operating expense agreement with CBSFA allows them to do so on a more-or-less break-even basis. Given the relatively recent ability of CDQ fisheries to retain cod when targeting halibut, CBSFA had been planning on having cod as a diversification opportunity, especially during times of low halibut abundance, but given the other current constraints on cod processing at the local plant has not to date pursued that option.

## 6.2.5 Engagement in the Commercial BSAI Halibut Fishery

### 6.2.5.1 Catcher Vessels with Local Ownership Addresses and Ex-Vessel Gross Revenues

Table 51 provides trend information on the number of vessels with local ownership addresses active in the BSAI/Area 4 commercial halibut fisheries. As shown, the number of vessels active in any one year has varied, but with a general trend of decreasing participation from 18 vessels in 2010-2011 to 12 vessels in 2016, before experiencing an uptick to 14 vessels in 2017-2018.

**Table 51. Individual BSAI Halibut Catcher Vessels by Community of Vessel Historic Ownership Address, CBSFA Region Community, 2008-2018 (number of vessels)**

| Region | Community | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 (number) | Annual Average 2010-2018 (percent) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CBSFA | Saint Paul Island | 18 | 18 | 17 | 16 | 16 | 13 | 12 | 14 | 14 | 15.3 | 100.0% |

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Information on BSAI halibut ex-vessel gross revenues of vessels with ownership addresses in the regional communities, to the extent possible within confidentiality constraints, is provided in Table 33. As shown, with an annual average BSAI halibut ex-vessel revenue of approximately $2.5 million over the period 2010-2018, the St. Paul halibut fleet was the highest producing halibut fleet of any community in any CDQ region (and was exceeded among all Alaska communities only by the GOA communities of Homer, Kodiak, and the aggregate of Juneau/Douglas/Sitka). For St. Paul vessels, however, the halibut ex-vessel revenues have been below the period average in each of the last six years for which data are available, with 2018 revenues, the most recent year for which data are available, being about 60 percent of the period average. Information on BSAI halibut vessel diversity, as measured by relative dependency on halibut compared to all species, gear, and area fisheries pursued by those same vessels on an annual average basis 2010-2018, is provided in Table 34. As shown in that table, the St. Paul halibut fleet is virtually 100 percent dependent upon BSAI halibut (i.e., the relevant vessels do not participate in any other fisheries).

For that same 2010-2018 period, Table 35 shows the annual average number of BSAI halibut catcher vessels with local ownership addresses, the annual average number all commercial fishing catcher vessels (all species, gear, and area fisheries) with local ownership addresses (i.e., the local "community commercial fishing fleet"), BSAI halibut ex-vessel gross revenues for the community commercial fishing fleet, total ex-vessel gross revenue for the commercial fishing fleet (from all species, gear, and area fisheries), and the percentage of halibut ex-vessel gross revenues as a percentage of the total ex-vessel gross revenues of the community commercial fishing fleet (i.e., the "dependency" of the community fleet on BSAI halibut as measured in the proportion of ex-vessel revenues derived from that fishery). As shown in that table, the St. Paul halibut fleet is the entirety of the St. Paul commercial fishing fleet (i.e., BSAI ex-vessel gross revenue dependency is virtually 100 percent). In other words, the entire St. Paul commercial fishing fleet is focused exclusively on halibut, with no revenue diversification.

This focus of the local fleet is consistent with the efforts of the CBSFA to use the development and maintenance of a local halibut fishery as a major source of employment, income, and subsistence for the community and its members. The CBSFA created a cooperative (the CBSFA Halibut Cooperative) in

2003 to purchase halibut from the local fleet at a competitive price and also provides support services for the fishermen through its Local Fleet Support Program.[76]

### 6.2.5.2 Other Measures of CDQ Community BSAI Halibut Harvest Engagement

As shown in Table 52, St. Paul is located in Area 4C. As noted in the bulleted text below the table. halibut quota share holdings by local residents are heavily focused on Area 4C.

**Table 52. Halibut Quota Share Holders and Quota Share Units Held, CBSFA Region, 2019**

| Community | Community Located in IPHC Area | Number of Unique Quota Share Holders | Total Quota Share Units Held | Percent of QS Units Held in Region |
|---|---|---|---|---|
| St Paul | 4C | 13 | 757,574 | 100.00% |
| **Regional Total** | | **13** | **757,574** | **100.00%** |

Source: https://www.fisheries.noaa.gov/sites/default/files/akro/19ifqunitfb.csv. Accessed 8/14/19

All quota shares held by St. Paul residents are Area 4C shares, with the exception of CDQ flagged quota.[77]

- St. Paul is one of two communities in Area 4C (see Figure 1). Area 4C has a 50 percent CDQ reserve that is allocated 85 percent to CBSFA and 15 percent to APICDA. St. George, the other community in Area 4C, is a member of the APICDA CDQ entity.
- 10 individuals in St. Paul hold quota shares in Area 4C exclusively.
- Two individuals in St. Paul hold quota shares in Area 4C plus CDQ flagged quota shares in Area 4A; another individual owns only CDQ flagged quota shares in Areas 3B and 4A (and no quota shares in Area 4C).

Another important way that communities are engaged in the commercial halibut fishery harvest sector, beyond local individuals owning vessels active in the fishery or holding halibut quota share units, is through employment of local residents as crew members on vessels participating in the fishery. As noted in Section 4.5.2, however, sources of systematically collected quantitative data on crew employment and earnings are not available for the halibut fishery in this or other regions.

### 6.2.5.3 Shore-Based Processors and First Wholesale Gross Revenues

The shore-based processor in St. Paul accepted BSAI halibut deliveries each year during the period 2010-2018. While more than one processor name appears in the data, only one unique physical plant was active in the community during these years. As noted in an earlier analysis (AECOM 2015), one entity in the data is a separate legal entity that used Trident's facility for processing activities. This entity, 170 Degrees West, is a subsidiary of the CBSFA and is the operating company of the CBSFA halibut cooperative. The organization is focused exclusively on halibut custom processing caught by CBSFA-affiliated vessels and is primarily focused on selling value-added products (CBSFA 2015).

[76] https://www.cbsfa.com/halibut.html accessed 8/19/2019.

[77] For more information on CDQ flagged shares, see the discussion contained in the footnote in Section 6.1.5.2.

According to the CBSFA website and public testimony before the Council, the CBSFA operates the local halibut fishery in conjunction with local fishermen, Saints Boats LLC (F/V Saint Paul and F/V Saint Peter), and Trident Seafoods. CBSFA purchases the halibut from the local fleet and partners with Trident to process and market the fish. During halibut processing, as noted above, CBSFA splits the cost of the shoreplant overhead and operating costs with Trident based on the proportion of CBSFA-purchased halibut and Trident-purchased halibut being processed in the plant, which facilitates the stability of a local halibut market that may not otherwise be economically sustainable by either party. Any halibut CDQ not able to be caught by the local St. Paul fleet is then leased to CBSFA's own boats, the F/V Saint Paul and F/V Saint Peter, if they are available at the end of the season.[78]

For the reporting of first wholesale gross revenues (or ex-vessel gross revenues for deliveries made to the plant in the absence of first wholesale gross revenue data), the shore-based processor in St. Paul was combined with those in Akutan and Unalaska due to confidentiality restrictions. Those data, available in Table 37 are presented in summary in Section 6.1.5.3.

## 6.2.6 Engagement in the Subsistence BSAI Halibut Fishery

As described in an earlier NPFMC analysis (AECOM 2015)[79] in St. Paul, subsistence data for the tribal village show that an average 14.3 fishermen were estimated to fish halibut from 2009-2012. The average number of halibut landed for 2009-2013 was 250.5, representing an estimated 4,985.5 pounds.

Table 53 presents selected information from the ADFG Community Information System for the potentially substantially engaged or substantially dependent halibut community (as selected by initial screening criteria) of St. Paul in the CBSFA region. As discussed in Section 6.1.6, while these data are often dated (e.g., 1994 is the most recent year available for St. Paul), they still represent the most comprehensive data encompassing all subsistence resources available that is comparable across regions. As shown, over 90 percent of all households are reported as using subsistence halibut. The percentage of halibut of all subsistence fish harvested was approximately 87 percent, while the retention of subsistence halibut from commercial fishing was approximately 27 percent. The latter two figures are the highest for any community characterized in this analysis.

**Table 53. Selected CSIS Halibut, Fish, and All Resources Subsistence Harvest Information, CBSFA Region, 1994**

| Community | Year(s) Data Are Available | Percent Using Halibut | Percent Harvesting Halibut | Halibut Reported Pounds Harvested | Halibut Estimated Total Pounds Harvested | All Fish Estimated Total Pounds Harvested | Halibut as a Percentage of Estimated Total Pounds of All Fish Harvested | All Resources Estimated Total Pounds Harvested | Halibut as a Percentage of Estimated Total Pounds of All Resources Harvested | Estimated Pounds of Subsistence Halibut Harvested Retained from Commercial Fisheries | Percent of Subsistence Halibut Estimated Total Pounds Harvested Retained from Commercial Fisheries |
|---|---|---|---|---|---|---|---|---|---|---|---|
| St. Paul | 1994 | 90.5% | 54.8% | 27,374 | 51,489 | 59,260 | 86.9% | 131,814 | 39.1% | 14,039 | 27.3% |

Source:ADFG Community Subsistence Information System https://www.adfg.alaska.gov/sb/CSIS/index.cfm?ADFG=harvInfo.harvestCommSelComm accessed 8/21/2019.

More recently, community leaders have stated that the most important subsistence species in the community include halibut, reindeer, fur seals, and sea lions (Himes-Cornell *et al.* 2013). Halibut is the primary fish species taken for subsistence. From 2000 through 2008 only one or two households held a subsistence salmon permit, and no data were available on the number fish harvested. Between 2003 and

[78] https://www.cbsfa.com/halibut.html accessed 8/19/2019.

[79] See Table 2-8 in that analysis (Proposed Bering Sea/Aleutian Islands Halibut PSC Limit Revisions Appendix C: Community Analysis)

2010, the number of St. Paul residents holding a SHARC card to harvest halibut declined from 250 to 41. The number of SHARC cards fished and the amount of halibut harvested (in pounds) also decreased between 2003 and 2010. SHARC harvest was 19,744 pounds in 2003, and 4,425 pounds in 2010. The year with the second highest subsistence halibut harvest was 2007 (11,342 pounds). Other species caught or gathered for subsistence include Pacific cod, rockfish, sablefish, sculpin, and flounder. Marine invertebrates included various crab species, octopus, clams, and sea urchins.

### 6.2.7 Engagement in the Commercial BSAI Groundfish Fishery

No St. Paul direct participation (outside of the CDQ program) in the BSAI groundfish fishery is shown for any year in the 2010-2018 dataset used for this analysis. No catcher vessels with St. Paul ownership addresses participated in the BSAI groundfish fishery in any year during this period. The shore-based processor in St. Paul accepted one or more relevant BSAI groundfish deliveries in one year only (2010) in the 2010-2018 timeframe, and none in the eight most recent years for which data are available.

### 6.2.8 CDQ Group Direct BSAI Halibut and/or Groundfish Engagement

In addition to participating in the BSAI halibut and/or BSAI groundfish fisheries through use of CDQ quota ownership in a number direct and indirect of ways, CBSFA, like other CDQ entities, has also invested in capital assets in the catcher vessel and/or catcher/processor sectors as another avenue to meet the economic and social goals of the CDQ program. Among vessels shown in the dataset used for analysis as actively participating in the sectors of the BSAI groundfish fishery relevant to this analysis in at least one year 2010-2018, 11 of those were listed in the most recent CDQ ownership attribution RIR (NMFS 2017) as owned at least in part by CBSFA. These vessels are listed in Table 54.

**Table 54. CDQ Ownership of Vessels Participating in Relevant BSAI Groundfish Sectors, CBSFA, 2010-2018**

| | ADFG Number | Vessel Name | CDQ Group | CDQ Ownership |
|---|---|---|---|---|
| 1 | 50570 | ALEUTIAN CHALLENGER | CBSFA | 9.9% |
| 2 | 59378 | AMERICAN DYNASTY | CBSFA | 9.9% |
| 3 | 60660 | AMERICAN TRIUMPH | CBSFA | 9.9% |
| 4 | 59687 | FORUM STAR | CBSFA | 9.9% |
| 5 | 55301 | KATIE ANN | CBSFA | 9.9% |
| 6 | 56618 | NORTHERN EAGLE | CBSFA | 9.9% |
| 7 | 60202 | NORTHERN JAEGER | CBSFA | 9.9% |
| 8 | 56987 | OCEAN ROVER | CBSFA | 9.9% |
| 9 | 75473 | SAINT PAUL | CBSFA | 100% |
| 10 | 76769 | SAINT PETER | CBSFA | 100% |
| 11 | 39197 | STARWARD | CBSFA | 75% |

Note (1): Vessel ownership addresses include Wasilla AK (2), Edmonds WA (1), and Seattle (8).
Note (2): Each of the listed vessels participated in one or more of the BSAI groundfish TLAS catcher vessel, hook-and-line catcher vessel, and/or CDQ sectors during at least one year 2010-2018.
Source: NOAA 2017, AKFIN 2019.

# 6.3 Coastal Villages Region Fund Region

## 6.3.1 Location

CVRF is a CDQ entity that includes communities on the western coast of Alaska. Many communities are within the Yukon Delta National Wildlife Refuge, south of the Yukon River Delta, and around Kuskokwim Bay. As identified through initial screening criteria, BSAI communities potentially substantially engaged in or dependent upon the BSAI/Area 4 halibut fishery within the CVRF region include Chefornak, Hooper Bay, Kipnuk, Mekoryuk, Newtok, Nightmute, Quinhagak, Toksook Bay, and Tununak. Other communities in CVRF include Chevak, Eek, Goodnews Bay, Kongiganak, Kwigillingok, Napakiak, Napaskiak, Oscarville, Platinum, Scammon Bay, and Tuntutuliak.

## 6.3.2 Historic Overview

The CVRF region has been a Yup'ik Eskimo traditional homeland for thousands of years. The Yup'ik were seasonally migratory, travelling throughout the region to secure game and fish resources. Small numbers of people were likely present at optimal coastal sites between 2,500 and 3,500 years ago (Shaw 1998). The presence of large coastal villages increased before 2,400 years ago as nets were introduced. These coastal locations gave quick access to sea mammals and fish and seasonal access upriver to inland resources such as caribou. These three resources (sea mammals, salmon, and caribou) made up the base of the broad subsistence economy (Shaw 1998). Prehistoric trade routes across the Bering Strait provided access to manufactured goods to native people in the region prior to the arrival of Russian explorers in the late 1700s and their establishment of trading posts in 1819. The economy of the region during the late 1800s was focused largely on fur trading and harvesting, with the community of Bethel emerging as a regional population and economic center. Through the 1900s, the economy transitioned to include commercial fishing, mining, and reindeer herding (Himes-Cornell *et al*. 2013).

A summary of the institutional structure of the contemporary CVRF region communities relevant to this SIA analysis is shown in Table 55. Narrative summaries of the historic context of each community listed are presented in the following sections.

**Table 55. Community Institutional Summary (Selected CVRF CDQ Communities)**

| Community | Borough | ANCSA Regional Corporation | ANCSA Village Corporation | Tribal Government | Municipal Government |
|---|---|---|---|---|---|
| Chefornak | Unorganized | Calista Corporation | Chefarnrmute Incorporated | Village of Chefornak | City of Chefornak |
| Hooper Bay | Unorganized | Calista Corporation | Sea Lion Corporation | Native Village of Hooper Bay | City of Hooper Bay |
| Kipnuk | Unorganized | Calista Corporation | Kugkaktlik, Limited | Native Village of Kipnuk | none (unincorporated) |
| Mekoryuk | Unorganized | Calista Corporation | Nima Corporation | Native Village of Mekoryuk | City of Mekoryuk |
| Newtok | Unorganized | Calista Corporation | Newtok Native Corporation | Newtok Village | none (unincorporated) |
| Nightmute | Unorganized | Calista Corporation | Chinuruk Incorporated | Native Village of Nightmute | City of Nightmute |
| Quinhagak | Unorganized | Calista Corporation | Qanirtuuq, Incorporated | Native Village of Kwinhagak | City of Quinhagak |
| Toksook Bay | Unorganized | Calista Corporation | Nunakauiak Yupik Corporation | Nunakauyarmiut Tribe | City of Toksook Bay |
| Tununak | Unorganized | Calista Corporation | Tununrmiut Rinit Corporation | Native Village of Tununak | none (unincorporated) |

#### 6.3.2.1 Chefornak

The village of Chefornak was not established in its current location until the mid-twentieth century, when Alexie Amagiqchik founded a small general store at the site. He had moved from a village on the Bering Sea to the new location one mainland to escape potential floodwaters. Others from the original village followed and settled in Chefornak, which was incorporated as a 2nd Class City in 1974. Chefornak is largely dependent on a subsistence economy, with employment opportunities limited to part time and seasonal work. Today, subsistence activities continue to be an important part of the community's identity; however, commercial fishing has also taken root as a driver of the local economy (Himes-Cornell *et al.* 2013).

#### 6.3.2.2 Hooper Bay

The early Yup'ik names for Hooper Bay are "Askinuk" or "Askinaghamiut". E.W. Nelson of the U.S. Signal Service first reported the village in 1878. The name Hooper Bay came into common usage after a post office with this name was established in 1934. Hooper Bay is a large traditional Yup'ik Eskimo community. Commercial fishing and subsistence activities are the primary means of support (DCCED 2019). Hooper Bay was incorporated in 1966 as a 2nd Class City with a mayoral form of government.

#### 6.3.2.3 Kipnuk

Kipnuk is a traditional Yup'ik Eskimo community, maintaining a subsistence lifestyle. According to Bureau of Indian Affairs records, the village of Kipnuk was established around 1922. Today, commercial fishing is an important source of income in Kipnuk. Kipnuk is an unincorporated community, however local government and utilities provide a majority of wage employment in Kipnuk along with seasonal activities such as fishing and construction. Subsistence activities also provide a foundation for the local economy and lifestyle (Himes-Cornell *et al*. 2013).

#### 6.3.2.4 Mekoryuk

Historically, the Native Eskimo people present in the area of Mekoryuk have been the Yup'ik peoples, specifically the Nuniwarmiut people who are Cup'ig Eskimos. Nunivak Island itself has been peopled for at least 2,000 years. Prior to the arrival of Europeans, subsistence hunting and fishing was the basis of the economy for people living on Nunivak Island and surrounding areas of the Yukon-Kuskokwim Delta. In 1821, the first outside contact occurred with the Russian American Company. The Company documented 400 people living in 16 villages on the Island. In 1874 a summer village camp by the name of "Koot" was noted at the modern-day site of Mekoryuk. There was an epidemic in 1900 which decimated the population. Only four families in the village survived. An Eskimo missionary built the Evangelical Covenant Church in the 1930s in the village, and a BIA school was built in 1939. The school attracted people to relocate from other parts of the Island to the village. By 1957, the only permanent community left on the Island was Mekoryuk, and around this time many of the families moved to the community of Bethel to be closer to a high school. Families returned seasonally to Mekoryuk for fishing and sea mammal hunting in the late spring.

Mekoryuk was incorporated as a 2nd Class City in 1969. The City has a Strong Mayor form of government, which includes a seven-person city council, including the mayor, a nine-person advisory school board, and several municipal employees. Today almost all local families continue to engage in subsistence activities, and most have fish camps. In Mekoryuk, major employers include the school, local and regional government and non-profit organizations, commercial fishing, construction, and service industries. According to a survey conducted by the AFSC in 2011, community leaders reported that

commercial fishing is the primary resource-based industry on which the economy depends. In addition, most families in Mekoryuk engage in subsistence fishing, and most have fish camps. Community leaders noted that halibut is also an important subsistence resource (Himes-Cornell *et al.* 2013).

### 6.3.2.5 Newtok

Newtok is a Yup'ik Eskimo village. The people of Newtok and Nelson Island are known as Qaluyaarmiut, or "dip net people." The name Newtok (Niugtagin Yup'ik) means "rustling of grass," appropriate for a village located on a sweeping bend of the Ninglick River. Only intermittent outside contact occurred until the 1920s. Newtok was first reported in 1949 by the U.S. Geologic Survey after residents of Old Kealavik, a site across the river, relocated to Newtok to escape seasonal flooding. A BIA school was built in 1958, and like many communities in rural Alaska, the village developed around the school (DCRA 2019). Harvest of marine resources has been important to residents of the Newtok area since prehistory. Subsistence fishing and hunting continue to be an important supplement to cash employment for Newtok residents (Himes-Cornell *et al.* 2013). Relative isolation from outside influences has allowed Newtok to retain traditions and customs to a greater degree than in other parts of Alaska. Residents of the village have an active subsistence lifestyle (DCCED 2019).

A city government incorporated in 1976 but was dissolved in 1997 in favor of the traditional village council government and Newtok remains an unincorporated community. Due to severe erosion and melting permafrost, the village is in the process of relocating to higher ground. Construction has begun in Mertarvik, the future site of Newtok.

### 6.3.2.6 Nightmute

Nightmute is a Yup'ik Eskimo village. The people of Nelson Island are known as Qaluyaarmiut, or "dip net people." Harvest of marine resources has been important to residents of the Nightmute area since prehistory. The Qaluyaarmiut have lived on the Bering Sea coast for at least 2,000 years. In 1841-1842, a Russian naval officer, Lieutenant Lavrenty Zagoskin, was the first to explore the lower Yukon and briefly came into contact with the Qaluyaarmiut. Contact with outside people and customs became more consistent during the 1950s. The traditional fish camp for the people of Nightmute is called Umkumiut. In 1964, many residents relocated to the present site of Toksook Bay to more easily access cost-effective goods. Those who remained make up most of the current population of Nightmute. Nightmute was incorporated in 1974 as a 2nd Class City. Because of the village's relative isolation from outside influences, traditions and customs have been retained in Nightmute to a greater degree than in other parts of Alaska. Subsistence fishing and hunting continue to be an important supplement to commercial fishing and other cash employment for Nightmute residents (Himes-Cornell *et al.* 2013).

### 6.3.2.7 Quinhagak

The Yup'ik name for Quinhagak is Kuinerraq, meaning "new river channel." Quinhagak, also known as Kwinhagak, is a long-established village whose origin has been dated to 1000 AD. It was the first village on the lower Kuskokwim to have sustained contact with Europeans. Gavril Sarichev reported the village on a map in 1826. After the purchase of Alaska in 1867, the Alaska Commercial Company sent annual supply ships to Quinhagak with goods for Kuskokwim River trading posts. Supplies were brought to shore from the ship and stored in a building on Warehouse Creek. A Moravian mission was built in 1893. There were many non-Natives in the village at that time; most were waiting for boats to go upriver. In 1904, a mission store opened, followed by a post office in 1905 and a school in 1909. Between 1906 and 1909, over 2,000 reindeer were brought in to the Quinhagak area. They were managed for a time by the Native-owned Kuskokwim Reindeer Company, but the herd had scattered by the 1950s. In 1915, the

Kuskokwim River was charted, so goods were barged directly upriver to Bethel. In 1928, the first electric plant opened; the first mail plane arrived in 1934. The community was incorporated as a 2nd Class City governed by a mayor and city council in 1975. The community is primarily Yup'ik Eskimos who fish commercially and are active in subsistence food gathering (Himes-Cornell *et al.* 2013).

#### 6.3.2.8 Toksook Bay

The Nelson Island area has been inhabited and utilized by Yup'iks for thousands of years. Toksook Bay, also known as Nunakauyak, was established in 1964 along the Tuqsuk River by residents of Nightmute. Toksook Bay was settled to be more accessible to the annual freighter ship, the North Star. Toksook Bay was incorporated in 1972 as a 2nd Class City. Today, Toksook Bay is a traditional Yup'ik Eskimo community with a reliance on fishing and subsistence activities.

#### 6.3.2.9 Tununak

In 1878, Nelson Island was named after Edward Nelson, a Smithsonian naturalist who noted six people, including one non-Native trader, living in Tununak. The city was incorporated in 1975, but it was dissolved on February 28, 1997, in favor of traditional council governance. Tununak remains an unincorporated community. Today, Tununak is a traditional Yup'ik village, with an active fishing and subsistence lifestyle.

### 6.3.3 Demographics

Demographic and socioeconomic characteristics for the potentially substantially engaged or substantially dependent BSAI halibut communities as determined by use of initial screening criteria in this area are presented in Table 56. All of the communities in CVRF can be considered small, rural communities with a high percentage of Alaska Native residents. For those communities considered BSAI halibut-dependent, the largest communities are Hooper Bay, Quinhagak, and Kipnuk with total populations of 1,093, 669, and 639 people, respectively. The smallest BSAI community potentially substantially engaged or substantially dependent halibut community in terms of population was Mekoryuk with 191 residents. All nine of the potentially substantially engaged or substantially dependent BSAI halibut communities in the CVRF had a percentage of Alaska Native residents of at least 92.0 percent (Toksook Bay) during the 2010 U.S. Census, with Kipnuk exhibiting the highest percentage of Alaska Native residents (97.7 percent).

For all the potentially substantially engaged or substantially dependent BSAI halibut communities in the CVRF, the percentage of minority residents is similar to the percentage of Alaska Native residents, suggesting relatively homogenous communities. No residents were living in group quarters at the time of the U.S. Census in 2010. Overall, per capita incomes are relatively low, ranging from $8,693 (Nightmute) to $17,486 (Quinhagak). Median household incomes ranged from $30,982 (Hooper Bay) to $53,750 (Chefornak), while median family incomes ranged from $31,389 (Hooper Bay) to $55,000 (Chefornak). Of the nine communities listed in the table, more than40 percent of the residents of one were considered low-income, as were more than 30 percent of the residents of five of the other communities.

**Table 56. CVRF Region BSAI Halibut Dependent Communities Selected Demographic Indicators**

| Community | Total Population | Alaska Native Residents (percent of total population) | Minority Residents (percent of total population) | Residents Living in Group Quarters (percent of total population) | Per Capita Income (dollars) | Median Household Income (dollars) | Number of Family Households | Median Family Income (dollars) | Low-Income Residents (percent of total population) |
|---|---|---|---|---|---|---|---|---|---|
| Chefornak | 418 | 95.7% | 96.7% | 0.0% | $10,535 | $53,750 | 72 | $55,000 | 18.3% |
| Hooper Bay | 1,093 | 94.6% | 98.1% | 0.0% | $8,832 | $30,972 | 194 | $31,389 | 47.3% |
| Kipnuk | 639 | 97.7% | 98.0% | 0.0% | $9,968 | $34,318 | 134 | $36,429 | 39.2% |
| Mekoryuk | 191 | 93.2% | 96.9% | 0.0% | $16,965 | $31,250 | 55 | $41,875 | 18.5% |
| Newtok | 354 | 96.1% | 97.2% | 0.0% | $10,042 | $43,750 | 55 | $44,063 | 36.6% |
| Nightmute | 280 | 94.6% | 95.4% | 0.0% | $8,693 | $45,000 | 37 | $45,250 | 31.0% |
| Quinhagak | 669 | 93.4% | 97.8% | 0.0% | $17,486 | $38,393 | 136 | $41,250 | 30.0% |
| Toksook Bay | 590 | 92.0% | 95.6% | 0.0% | $15,211 | $52,857 | 106 | $53,500 | 21.3% |
| Tununak | 327 | 94.5% | 96.0% | 0.0% | $9,493 | $35,000 | 58 | $37,500 | 37.2% |

*Defined as those persons living below the poverty threshold by the U.S. Census Bureau in the 2013-2017 American Community Survey. As a point of reference, a family of four (two adults and two children) had a poverty threshold of $25,465 in 2018.
Source: US Census 2010; US Census 2018.

## 6.3.4 Local Economy

The economy of the region is currently focused on commercial fisheries, but the nature of regional engagement in those fisheries has changed over time, particularly with the creation and evolution of the CDQ program and the CVRF group in particular. Some tourism and sportfishing occurs in the region, with most services and amenities offered in the Bethel area. The use of natural resources for subsistence use is relatively high in this region compared to other areas, with over 2,000 households in the area annually harvesting salmon for subsistence use (Himes-Cornell *et al.* 2013).

## 6.3.5 Engagement in the Commercial BSAI Halibut Fishery

### 6.3.5.1 Catcher Vessels with Local Ownership Addresses and Ex-Vessel Gross Revenues

Table 57 provides trend information on the number of vessels with ownership addresses in CVRF region communities that were active in the BSAI/Area 4 commercial halibut fisheries 2010-2018. Unlike Table 31, which lists only those nine communities with an annual average of two or more active BSAI halibut catcher vessels on an annual average basis (one of the initial screening criteria for halibut dependency), this table shows all regional communities with even one vessel active in any one year during 2010-2018 (i.e., an additional six regional communities, plus Bethel which, while neither a member community of the CVRF CDQ group nor in the geographic region covered by the CDQ group, is nearby and serves as a regional hub). As shown, average annual participation ranged widely during the period 2010-2018: three regional communities (Kwigillingok, Platinum, and Tuntutuliak) participated with only one vessel and in only one year (2013) for an annual average of 0.1 vessels per year, while Mekoryuk, Toksook Bay, and Tununak each had an annual average of over 10 vessels participating in the fishery.

It is important to note that two of the communities shown in Table 57, Chevak and Goodnews Bay, averaged over 2.0 vessels active in the fishery, one of the initial screening criteria for potential community engagement in or dependency on the BSAI halibut fishery, over the years 2010-2013, i.e.,

before the regional discontinuation of direct participation in the fishery. With the exception of three years for Chevak (2011-2013) and one year for Goodnews Bay (2013), all ex-vessel gross revenue data associated with these vessels are confidential.

**Table 57. Individual BSAI Halibut Catcher Vessels by Community of Vessel Historic Ownership Address, CVRF Region Communities, 2008-2018 (number of vessels)**

| Region | Community | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 (number) | Annual Average 2010-2018 (percent) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CVRF | Bethel* | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.1% |
| CVRF | Chefornak | 23 | 21 | 8 | 20 | 2 | 0 | 0 | 0 | 0 | 8.2 | 10.7% |
| CVRF | Chevak | 2 | 5 | 6 | 4 | 0 | 0 | 0 | 0 | 0 | 1.9 | 2.4% |
| CVRF | Goodnews Bay | 2 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0.9 | 1.2% |
| CVRF | Hooper Bay | 7 | 9 | 9 | 11 | 0 | 0 | 0 | 0 | 0 | 4.0 | 5.2% |
| CVRF | Kipnuk | 20 | 24 | 20 | 19 | 0 | 0 | 0 | 0 | 0 | 9.2 | 12.0% |
| CVRF | Kongiganak | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0.7 | 0.9% |
| CVRF | Kwigillingok | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.1% |
| CVRF | Mekoryuk | 28 | 29 | 24 | 24 | 12 | 0 | 0 | 0 | 0 | 13.0 | 16.9% |
| CVRF | Newtok | 8 | 8 | 8 | 10 | 1 | 0 | 0 | 0 | 0 | 3.9 | 5.0% |
| CVRF | Nightmute | 5 | 8 | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 2.9 | 3.7% |
| CVRF | Platinum | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.1% |
| CVRF | Quinhagak | 2 | 8 | 9 | 16 | 0 | 0 | 0 | 0 | 0 | 3.9 | 5.0% |
| CVRF | Toksook Bay | 33 | 39 | 30 | 31 | 8 | 0 | 0 | 0 | 0 | 15.7 | 20.3% |
| CVRF | Tuntutuliak | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.1% |
| CVRF | Tununak | 27 | 29 | 26 | 28 | 2 | 0 | 0 | 0 | 0 | 12.4 | 16.1% |
| **CVRF** | **Regional Subtotal** | **158** | **181** | **150** | **178** | **27** | **0** | **0** | **0** | **0** | **77.1** | **100.0%** |

*Bethel is not a CDQ community nor is it within the CDQ region. It is listed, however, due to its function as a regional hub.

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Beyond these annual averages, however, the most striking pattern of participation seen in the CVRF region is the complete cessation of local vessel participation in BSAI halibut fishery that occurred during the 2010-2018 period. In the four years 2010-2013, between 150 and 181 catcher vessels with ownership addresses in communities in the CVRF region participated in the BSAI commercial halibut fishery in any given year. In 2014, a total 27 vessels with CVRF region community ownership addresses participated in the fishery. In the four most recent years for which data are available, no vessels with ownership addresses in the CVRF region participated in the BSAI commercial halibut fishery. This suspension of direct participation of multiple local communities in the commercial halibut fishery is attributable to a shift in CVRF strategy for its CDQ fishery holdings (itself due to multiple factors, including declining halibut quotas and the economics of in-region processing, among others, as noted in Section 6.3.5.3).

Information on BSAI halibut ex-vessel gross revenues of vessels with ownership addresses in the regional communities, to the extent possible within confidentiality constraints, is provided in Table 33. Of the four individual CVRF communities listed individual,[80] annual average BSAI halibut ex-vessel gross revenues in 2010-2018 ranged from $11,000 (Hooper Bay) to $228,000 (Toksook Bay), with the other two communities (Kipnuk and Mekoryuk) falling in between ($28,000 and $192,000, respectively).

[80] The four communities listed had sufficient levels of participation to disclose data for each year they were active in the fishery 2010-2018. Other communities have been aggregated to preserve data confidentiality.

Importantly, however, these values would be substantially higher if calculated for only the years 2010-2013 when all four were still active in the fishery, or even for 2010-2014 when two of the four will still active in the fishery. Information on BSAI halibut vessel diversity, as measured by relative dependency on halibut compared to all species, gear, and area fisheries pursued by those same vessels on an annual average basis 2010-2018, is provided in Table 34. As shown in that table, dependency of the BSAI halibut vessel fleets in the four individual communities ranged between 98 percent and 100 percent (and the rest of the CVRF communities active at any level of participation in the fishery combined was 94 percent). In other words, vessels with CVRF community ownership addresses that were active in the halibut fishery focused virtually exclusively on (and were therefore virtually exclusively economically dependent upon) the BSAI halibut fishery, as they did not participate in other commercial fisheries as part of a diversified fishing portfolio.

For that same 2010-2018 period, Table 35 shows the annual average number of BSAI halibut catcher vessels with local ownership addresses, the annual average number all commercial fishing catcher vessels (all species, gear, and area fisheries) with local ownership addresses (i.e., the local "community commercial fishing fleet"), BSAI halibut ex-vessel gross revenues for the community commercial fishing fleet, total ex-vessel gross revenue for the commercial fishing fleet (from all species, gear, and area fisheries), and the percentage of halibut ex-vessel gross revenues as a percentage of the total ex-vessel gross revenues of the community commercial fishing fleet (i.e., the "dependency" of the community fleet on BSAI halibut as measured in the proportion of ex-vessel revenues derived from that fishery). As shown in that table, of the three communities that can, within the constraints of data confidentiality, be listed independently, the Mekoryuk community fleet was 86 percent dependent on the BSAI halibut fishery, while the Kipnuk and Toksook Bay community fleets were less dependent on that fishery (at 10 percent and 29 percent dependency, respectively). For all other CVRF communities that had some level of direct participation in the BSAI halibut fishery 2010-2018 combined, the aggregate community fleet annual average dependency on the BSAI halibut fishery was 14 percent during this period. It is important to note, however, that these 2010-2018 annual dependency averages were depressed by zero direct participation in the BSAI halibut fishery in the years 2014-2018 for some CVRF communities and for all CVRF communities in the years 2015-2018.

### 6.3.5.2 Other Measures of CDQ Community BSAI Halibut Harvest Engagement

As shown in Table 58, communities in the CVRF region (or near the CVRF region, in the case of Bethel) whose residents hold halibut quota shares are located in Area 4E. As noted in the bulleted notes, halibut quota share holding by local residents is heavily focused on Area 4E.

**Table 58. Halibut Quota Share Holders and Quota Share Units Held, CVRF Region Communities, 2019**

| Community | Community Located in IPHC Area | Number of Unique Quota Share Holders | Total Quota Share Units Held | Percent of QS Units Held in Region |
|---|---|---|---|---|
| Bethel | 4E | 2 | 958 | 0.22% |
| Goodnews Bay | 4E | 1 | 5,155 | 1.19% |
| Mekoryuk | 4E | 18 | 374,106 | 86.09% |
| Toksook Bay | 4E | 21 | 49,901 | 11.48% |
| Tununak | 4E | 1 | 4,454 | 1.02% |
| **Regional Total** | | **43** | **434,574** | **100.00%** |

Source: https://www.fisheries.noaa.gov/sites/default/files/akro/19ifqunitfb.csv. Accessed 8/14/19

With the exception of the holdings of one individual in one community, halibut quota shares held by individuals in the CVRF region are Area 4E shares.

- All CVRF communities are located in Area 4E (see Figure 1). Area 4E has a 100 percent CDQ reserve that is allocated 70 percent to CVRF and 30 percent to BBEDC. [81]
- Bethel is not a CDQ community (and is nearby, but not in the geographic area spanned by the CVRF) but is included in this analysis based on its function as a regional hub. Two individuals in Bethel hold quota shares in Area 4E exclusively.
- One individual in Goodnews Bay holds quota shares in Area 4E exclusively.
- 17 individuals in Mekoryuk hold quota shares in Area 4E exclusively. One individual in Mekoryuk holds quota shares in Area 4E and 3A (and does not hold shares in Area 4E).
- 21 individuals in Toksook Bay hold quota shares in Area 4E exclusively.
- One individual in Tununak holds quota shares in Area 4E exclusively.

Another important way that communities are engaged in the commercial halibut fishery harvest sector, beyond local individuals owning vessels active in the fishery or holding halibut quota share units, is through employment of local residents as crew members on vessels participating in the fishery. As noted in Section 4.5.2, however, sources of systematically collected quantitative data on crew employment and earnings are not available for the halibut fishery in this or other regions.

#### 6.3.5.3 Shore-Based Processors and First Wholesale Gross Revenues

Shore-based processors in Chefornak, Hooper Bay, Kipnuk, Mekoryuk, Toksook Bay, and Tununak accepted BSAI halibut deliveries each year 2010-2013, as shown in Table 36. One unique processor appears in the data for each community over these years. No processors in any of these communities accepted BSAI halibut deliveries in any year 2014-2018.

Table 59 provides additional years of historic participation by shore-based processors in the CVRF region that accepted BSAI halibut deliveries (i.e., years not covered by the 2010-2018 dataset primarily used for this analysis). As shown, the plant in Mekoryuk appears in the data as early as 1991, with the number of single-plant communities increasing to six by 2003. This level of engagement, and the specific communities involved, remained unchanged through 2013.

[81] As noted in the discussion contained in the footnote in Section 6.1.5.2, any individuals shown in the data as holding quota share units in Area 4E, which has a 100 percent CDQ reserve, did not qualify for compensatory shares. As there is no TAC set in 4E, those shares are not issued quota pounds (i.e., they cannot be fished and typically have no sale value).

**Table 59. Shore-Based Processors in CVRF Region Accepting BSAI Halibut Deliveries by Community of Operation, 1991-2009 (number of processors)**

| Region | Community | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 1990 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CVRF | Chefornak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CVRF | Hooper Bay | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CVRF | Kipnuk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CVRF | Mekoryuk | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CVRF | Toksook Bay | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CVRF | Tununak | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Table 60 provides additional years of historic participation by catcher vessels with CVRF community ownership addresses delivering BSAI halibut to the shore-based processors in the CVRF region shown in Table 59 (i.e., years not covered by the 2010-2018 dataset primarily used for this analysis). As shown, a total of 14 CVRF communities had at least one vessel that made at least one delivery in at least one year during the period shown. This includes Scammon Bay, which does not show up in the 2010-2018 data shown in Table 57 (but does not include two communities that began their engagement in the fishery through being the community of catcher vessel ownership address in later years, Platinum and Quinhagak, as shown in that same table).[82]

**Table 60. BSAI Individual Halibut Vessels by CVRF Region Community of Vessel Historic Ownership Address, That Delivered to Shore-Based Processors in the CVRF Region, 1991-2009 (number of vessels)**

| Region | Community | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 1990 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CVRF | Chefornak | 0 | 0 | 0 | 0 | 1 | 3 | 9 | 8 | 0 | 8 | 21 | 15 | 8 | 15 | 14 | 18 | 29 | 28 | 20 |
| CVRF | Chevak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 |
| CVRF | Goodnews Bay | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| CVRF | Hooper Bay | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 13 | 1 | 6 | 4 | 5 | 5 | 10 |
| CVRF | Kipnuk | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 9 | 0 | 7 | 0 | 1 | 23 | 16 | 9 | 14 | 22 | 21 | 23 |
| CVRF | Kongiganak | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| CVRF | Kwigillingok | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| CVRF | Mekoryuk | 14 | 13 | 22 | 15 | 13 | 18 | 26 | 2 | 30 | 33 | 28 | 30 | 25 | 29 | 28 | 27 | 29 | 26 | 27 |
| CVRF | Newtok | 0 | 0 | 0 | 1 | 0 | 4 | 8 | 3 | 0 | 9 | 8 | 8 | 5 | 6 | 4 | 6 | 14 | 9 | 6 |
| CVRF | Nightmute | 0 | 0 | 0 | 1 | 10 | 12 | 14 | 8 | 0 | 15 | 12 | 8 | 6 | 4 | 8 | 10 | 9 | 7 | 7 |
| CVRF | Scammon Bay | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 |
| CVRF | Toksook Bay | 0 | 0 | 5 | 16 | 27 | 21 | 30 | 30 | 0 | 38 | 45 | 34 | 39 | 21 | 34 | 28 | 40 | 37 | 32 |
| CVRF | Tuntutuliak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| CVRF | Tununak | 1 | 0 | 2 | 20 | 27 | 21 | 24 | 9 | 0 | 28 | 33 | 29 | 25 | 21 | 25 | 24 | 31 | 29 | 28 |

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

[82] Vessels with ownership addresses in seven non-CVRF member communities are shown in the data as having made at least one BSAI halibut delivery to shore-based processing plants in CVRF region communities during at least one year 1991-2013. These include communities that show up in the data for one year: Petersburg (2009) and Nome (2012), Alaska; South Bend, Oregon (2008); and Ilion, New York (2006). Anchorage appears in each of the 23 years 1991-2013, with more than one vessel making at least one delivery all years, with one exception (1998) and up to a maximum of five vessels per year (which occurred in five different years). Bethel and Kwethluk, approximately 10 miles apart and both outside of but near the inland boundary of the CVRF region, appear in the data for multiple years. Kwethluk appears in the data with one vessel in each of three years (1998, 2000, and 2001), while Bethel appears in the data 17 out of 23 years, with more than one vessel in 11 of those years (with a maximum of 6 vessels per year, which occurred in one year).

As noted in Section 4.5.3, first wholesale gross revenue data for shore-based processors sufficient to calculate processing diversity are not available. In the absence of first wholesale gross revenue information, ex-vessel gross revenue information for BSAI deliveries made at shore-based plants in presented in Table 37. As shown in that table, to preserve data confidentiality data from Chefornak, Kipnuk, and Toksook Bay are aggregated into a group, as are data from Hooper Bay, Mekoryuk, and Tununak. Annual average ex-vessel gross revenues of deliveries for the two groups of communities over the period 2010-2018 were $320,000 and $150,000, respectively, recognizing that these averages represent nine years of data, five of which have a zero value for all communities. While there are modest values compared to some other regions, as shown in Table 39, these ex-vessel gross revenues associated with BSAI halibut deliveries are virtually the all of the ex-vessel gross revenues associated with any deliveries from any fishery to any shore-based processor in these communities over the period 2010-2018. In other words, this illustrates essentially a complete dependency of all shore-based processing on BSAI halibut in these communities, despite the fact that no BSAI halibut has been processed there for the five most recent years covered by the data.

As stated in an earlier analysis (AECOM 2015), according to Coastal Villages Seafoods management, in 2012 Coastal Villages Seafoods believed that the halibut quota was too low to economically run plants in each of these communities, so halibut processing operations in the communities of Chefornak, Hooper Bay, Kipnuk, Mekoryuk, Toksook Bay, and Tununak were mothballed in favor of operating a buying station in each community. Further, as stated the 2015 analysis, (1) in 2012 and 2013, halibut were offloaded in these communities, put on ice, and shipped to the Goodnews Bay Regional Processing Plant in Platinum (which does not appear in the current [2010-2018] data set used for this analysis[83]); (2) in 2014, Coastal Villages Seafoods attempted to have some their local fishermen catch their halibut quota, but they were unable to catch it all and the operation proved uneconomical; (3) in 2015 Coastal Villages Seafoods leased out all of their CDQ halibut quota to a longliner; and (4) then-current plans were to keep the plants in these six communities mothballed until the halibut quota increases or economic conditions otherwise change.

Follow-up with Coastal Villages Seafoods management personnel for the current (2019) analysis confirmed that the conditions described for the in-region halibut fishery in the earlier report have not changed. In addition, it was noted that salmon processing operations in Quinhagak were discontinued in 2009 when the Goodnews Bay Regional Processing Plant in Platinum came online; however, the plant in Platinum was subsequently closed, with 2015 being the most recent year of salmon production occurred at that facility (or elsewhere in the region) due to a combination of a relatively low volume of inputs and relatively high expenses of operation. In the absence of conditions that have been determined necessary to permit economically viable/sustainable in-region processing and local commercial fleet support initiatives for the BSAI halibut fishery in at least some of their member communities, CVRF has focused efforts on leveraging their CDQ quota holdings for the benefit of all of their constituents, according to senior Coastal Villages Seafoods management personnel. While this shift away from targeted support of in-region fisheries has unavoidably had adverse effects in communities most directly benefitting from this support (such as Mekoryuk, perhaps the most prominent case, which is shown in the data as participating in the fishery for 28 straight years through both local catcher vessel ownership and being the location of an active shore-based processing plant[84]), it has had the broader effect of distributing the returns from CVRF holdings of CDQ quota more widely among its member communities and illustrates the challenges

[83] What appears to be this plant is shown in the data as being located in Anchorage but has a port name of Quinhagak (rather than either Platinum or Goodnews Bay) in a separate field.

[84] Mekoryuk was selected for characterization as a case study in a recent article on CDQs and non-economic factors in community well-being due to the social impact associated with the local plant closure and discontinuation of local fleet participation in the halibut fishery (Lyons, et al., 2019).

of difficult decisions especially in times of decreased resource abundance and in the context of a complex constituency.

## 6.3.6 Engagement in the Subsistence BSAI Halibut Fishery

As described in an earlier NPFMC analysis (AECOM 2015)[85] for those CVRF communities for which subsistence data are available, the potentially substantially engaged or substantially dependent BSAI halibut communities as determined by use of initial screening criteria with the largest number of estimated halibut subsistence fishermen were Kipnuk and Toksook Bay, both with an average of 8.3 fishermen from 2009-2012. The average numbers of halibut landed for 2009-2012 were 145.3 and 97.8, representing an estimated 1,091.0 and 705.8 pounds, respectively. For other CVRF communities, the average number of halibut fishermen from 2009-2012 was generally fewer than 10; however, the estimated average number of halibut fishermen in Kwigillingok was 31.0, although no halibut were landed by these fishermen and data may not be completely accurate.

Table 61 presents selected information from the ADFG Community Information System for the potentially substantially engaged or substantially dependent halibut communities in the CVRF region as selected by initial screening criteria. As discussed in Section 6.1.6, while these data are often dated (e.g., 1986 is the most recent year available for Tununak), they still represent the most comprehensive data encompassing all subsistence resources available that is comparable across regions. As shown, however, CVRF region potentially halibut dependent communities are underrepresented in the data compared to potentially halibut dependent communities in other regions covered by this analysis. Of those communities for which there are data, one (Quinhagak) had 69 percent and the other (Tununak) had 100 percent of households using subsistence halibut. The percentage of halibut of all subsistence fish harvested is seven and 12 percent in Quinhagak and Tununak, respectively, while the percentage of retention of subsistence halibut from commercial fishing is only available for Quinhagak (three percent).

**Table 61. Selected CSIS Halibut, Fish, and All Resources Subsistence Harvest Information, CVRF Region Communities, Various Years**

| Community | Year(s) Data Are Available | Percent Using Halibut | Percent Harvesting Halibut | Halibut Reported Pounds Harvested | Halibut Estimated Total Pounds Harvested | All Fish Estimated Total Pounds Harvested | Halibut as a Percentage of Estimated Total Pounds of All Fish Harvested | All Resources Estimated Total Pounds Harvested | Halibut as a Percentage of Estimated Total Pounds of All Resources Harvested | Estimated Pounds of Subsistence Halibut Harvested Retained from Commercial Fisheries | Percent of Subsistence Halibut Estimated Total Pounds Harvested Retained from Commercial Fisheries |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chefornak | none | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Hooper Bay | none | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Kipnuk | none | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mekoryuk | none | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Newtok | none | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Nightmute | none | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Quinhagak | 1982 | none reported | none reported | -- | -- | 232,940 | -- | 363,740 | -- | -- | -- |
| Quinhagak | 2013 | 68.8% | 15.6% | 5,118 | 7,606 | 108,422 | 7.0% | 215,950 | 3.5% | 233.5 | 3.1% |
| Toksook Bay | none | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Tununak | 1986 | 100.0% | 93.9% | 15,800 | 30,643 | 254,651 | 12.0% | 358,100 | 8.6% | no data | -- |

Source:ADFG Community Subsistence Information System https://www.adfg.alaska.gov/sb/CSIS/index.cfm?ADFG=harvInfo.harvestCommSelComm accessed 8/21/2019.

[85] See Table 2-8 in that analysis (Proposed Bering Sea/Aleutian Islands Halibut PSC Limit Revisions Appendix C: Community Analysis)

As part of the AFSC's most recent compilation of baseline socioeconomic community profiles, researchers compiled subsistence data from Alaska Department of Fish and Game Division of Subsistence reports, U.S. Fish and Wildlife Service reports, and other published quantitative data. AFSC researchers also elicited qualitative information from some civic leaders via a survey regarding their community's most important subsistence species. The following information is based on information published by the AFSC (Himes-Cornell *et al.* 2013):

- In Chefornak, no information is available on household participation and limited records show 63 salmon taken in 2004 and four walruses taken between 2000-2010 for subsistence use.
- In Hooper Bay, no information is available on household participation, but other records suggest relatively high subsistence salmon (Chinook) harvests and subsistence take of ringed seals and other marine mammals.
- In Kipnuk, no Alaska Department of Fish and Game information is available on household participation in subsistence harvesting but other reports suggest that marine mammals are harvested throughout the year and that herring is also an important subsistence fishery within the larger region.
- In Mekoryuk, a 1990 Alaska Department of Fish and Game survey found that 100 percent of households used herring and herring sac roe as a subsistence resource; additionally, other records show an average of 1,062 salmon (chum) harvested per year between 2000-2008 and that a few marine mammals are harvested on an annual basis.
- In Newtok, a 1990 Alaska Department of Fish and Game survey found that 100 percent of households used herring and herring sac roe as a subsistence resource; additionally, other records show subsistence salmon (sockeye) harvesting and a limited amount of marine mammal harvesting between 2000 and 2010.
- In Nightmute, a 1990 Alaska Department of Fish and Game survey found that 100 percent of households used herring and herring sac roe as a subsistence resource; additionally, other records show subsistence salmon (sockeye) harvesting.
- In Quinhagak, community leaders stated that fur seals, salmon, and beluga whales were the three most important subsistence marine resources in the community; a 1982 Alaska Department of Fish and Game survey found that several different species of marine mammals were harvested for subsistence by community residents, including bearded seal, ringed seal, spotted seal, and Steller sea lion.
- In Toksook Bay, records show that salmon (chum) are the harvested for subsistence in addition to beluga whales and walrus.
- In Tununak, no recent information is available on household participation, but other records suggest some salmon (coho) subsistence harvest, as well as marine mammal harvests of bearded seal, ribbon seal, ringed seal, spotted seal, and Steller sea lion.

### 6.3.7 Engagement in the Commercial BSAI Groundfish Fishery

Direct CVRF individual community participation in the BSAI groundfish fishery over the period 2010-2018 was limited to the BSAI groundfish hook-and-line catcher vessel sector and the BSAI groundfish shore-based processor sector. Participation was extremely limited within both sectors in terms of participants, years (2013 only), and species (cod only). One BSAI groundfish hook-and-line catcher vessel with a Mekoryuk ownership address participated in the fishery in 2013 (only). Shore-based processors in Chefornak, Kipnuk, Mekoryuk, and Toksook Bay appear in the data as having accepted one or more BSAI groundfish deliveries in 2013 (only). The one catcher vessel noted was the only vessel with

BSAI groundfish flagged as target catch; multiple other vessels delivered BSAI groundfish in 2013 to the plants noted, but all of these deliveries were flagged in the data as catch occurring during halibut target efforts. All volume and revenue information related to this catcher vessel and shore-based processing activity is confidential.

### 6.3.8 CDQ Group Direct BSAI Halibut and/or Groundfish Engagement

In addition to participating in the BSAI halibut and/or BSAI groundfish fisheries through use of CDQ quota ownership in a number direct and indirect of ways CVRF, like other CDQ entities, has also invested in capital assets in the catcher vessel and/or catcher/processor sectors as another avenue to meet the economic and social goals of the CDQ program. Among vessels shown in the dataset used for analysis as actively participating in the sectors of the BSAI groundfish fishery relevant to this analysis in at least one year 2010-2018, five of those were listed in the most recent CDQ ownership attribution RIR (NMFS 2017) as owned at least in part by CVRF. These vessels are listed in Table 62.

**Table 62. CDQ Ownership of Vessels Participating in Relevant BSAI Groundfish Sectors, CVRF, 2010-2018**

| | ADFG Number | Vessel Name | CDQ Group | CDQ Ownership |
|---|---|---|---|---|
| 1 | 56016 | DEEP PACIFIC* | CVRF | 100% |
| 2 | 63484 | LILLI ANN | CVRF | 100% |
| 3 | 36047 | NORTH CAPE** | CVRF | 100% |
| 4 | 60795 | NORTHERN HAWK | CVRF | 100% |
| 5 | 8225 | SEA VENTURE** | CVRF | 100% |

*Deep Pacific was replaced by the more modern Flika (ADFG No. 669492) in 2018.

**The North Cape and the Sea Venture are reportedly no longer owned by CVRF.

Note (1): Vessel ownership addresses include Anchorage (4) and Gig Harbor WA (1).

Note (2): Each of the listed vessels participated in one or more of the BSAI groundfish TLAS catcher vessel, hook-and-line catcher/processor, and/or CDQ sectors during at least one year 2010-2018.

Source: NOAA 2017, AKFIN 2019.

## 6.4 Norton Sound Economic Development Corporation Region

### 6.4.1 Location

NSEDC is the CDQ entity that includes communities around Norton Sound, north to communities near the Bering Strait, including the communities on Little Diomede and St. Lawrence As identified through initial screening criteria, BSAI communities potentially substantially engaged in or dependent upon the BSAI/Area 4 halibut fishery within NSEDC include Nome and Savoonga. Other NSEDC communities include Brevig Mission, Diomede (Inalik), Elim, Golovin, Gambell, Koyuk, St. Michael, Shaktoolik, Tebbins, Teller, Unalakleet, Wales, and White Mountain.

## 6.4.2 Historic Overview

The Bering Strait area was above water 10,000 to 25,000 years ago and the area formed a land bridge to the Asian continent that is thought to have been a primary route by which humans migrated to North America. Archaeological sites in the area date human occupation to 12,000 years ago, and evidence exists that Malemiut, Kauweramiut, and Unalikmiut Inupiat settled on the Seward Peninsula approximately 4,000 years ago (Himes-Cornell *et al.* 2013). Marine mammals were an important subsistence resource and the largest pre-contact settlements were located based to most easily access this resource (Harritt 2010). Numerous archaeological excavations in the region have found evidence of a focus on marine resources such as seal, walrus and beluga bones as well as net sinkers and mollusk shells (Harritt 2010). Known for refined marine mammal hunting and fishing practices, the traditional subsistence economy is generally characterized as marine focused with an emphasis on mammals to the north and fish to the south (Tremayne, *et al.* 2018).

Inupiat in the region had existing trade relationships with villages in Siberia. Some coastal towns, including St. Michael and Unalakleet, became regional trade centers. Russians were active in the area starting in the mid-late 1800s. A large-scale fur trade was developed, and support services for whaling and trading ships increased trade activity in the Bering Strait region. The arrival of Russian explorers and a series of disease outbreaks changed trade networks and reduced the population of the region. In the 1950s, the U.S. Bureau of Indian Affairs built schools at seasonal fish camp sites to encourage a more sedentary lifestyle (Himes-Cornell *et al*. 2013).

A summary of the institutional structure of the contemporary NSEDC region communities relevant to this SIA analysis is shown in Table 63. Narrative summaries of the historic context of the communities listed are presented in the following sections.

**Table 63. Community Institutional Summary (Selected NSEDC CDQ Communities)**

| Community | Borough | ANCSA Regional Corporation | ANCSA Village Corporation | Tribal Government | Municipal Government |
|---|---|---|---|---|---|
| Nome | Unorganized | Bering Straits Native Corporation | Sitnasuak Native Corporation | Nome Eskimo Community<br>Native Village of Council<br>King Island Native Community | City of Nome |
| Savoonga | Unorganized | Bering Straits Native Corporation | Kukulget, Incorporated | Native Village of Savoonga | City of Savoonga |

### 6.4.2.1 Nome

Today, many Alaska Native residents of Nome trace their ancestry to original settlers of the Seward peninsula and currently identify with Inupiat culture. Until recently, Nome was not thought to have been a settlement site prior to Western contact and the discovery of gold in the area in the late 1800s. However, the 2005 discovery of the remains of a 300-year-old semi-subterranean house on the Snake River Sandspit in Nome provides evidence that the Native people lived here before the arrival of Westerners. A second semi-subterranean house and trash midden were discovered in 2006. Radiocarbon dating of animal bones from the midden suggest that Inupiat peoples may have lived at the site as early as 1700 AD (Himes-Cornell *et al*. 2013).

The City of Nome was incorporated in 1901. By 1902, the more easily reached gold claims were exhausted and large mining companies with better equipment took over the mining operations. Since the first strike on tiny Anvil Creek, Nome's gold fields have yielded a total of $136 million. The gradual depletion of gold, a major influenza epidemic in 1918, the Great Depression, and World War II each

influenced Nome's population. Nome's role in war history was to serve as a station for troops and supplies during World War II.

The population of Nome is home to Inupiat and non-Native residents. Although some employment opportunities are available, subsistence activities are prevalent in the community. Former villagers from King Island[86] also live in Nome. Nome is the finish line for the 1,100-mile Iditarod Trail Sled Dog Race from Anchorage, held each March.

Nome was incorporated in 1901 and is organized as a 1st Class City. Three federally recognized Tribes, the Nome Eskimo Community, King Island Native Community, and the Native Village of Council[87] have their Tribal government offices in the community and members residing in Nome. The self-governing Tribe for Nome itself, recognized by the Bureau of Indian Affairs, is the Nome Eskimo Community (NEC). In addition to acting as the local tribal governing body, NEC offers social services and programs, including family services, tribal services, tribal youth programs, a tribal housing program, and a tribal resources program, which seeks to educate tribal members about local and broader environmental issues. Tribes in Nome are also member villages of Kawerak Inc., a tribal non-profit organization with a mission of "Advancing the capacity of our People and Tribes for the benefit of the region." Kawerak, Inc. is one of the 12 regional Alaska Native 501(c)(3) nonprofit organizations that were identified under ANCSA and charged with naming incorporators to create regional for-profit corporations.

#### 6.4.2.2 Savoonga

St. Lawrence Island has been inhabited intermittently for the past 2,000 years by Yup'ik Eskimos. In the 1800s, numerous villages were located on the island with a population totaling about 4,000 people. The population was dramatically reduced when a famine swept across the island between 1878 and 1880. Given its strategic location, the island was an important defense site during World War II and maintained that role throughout the Cold War due to its proximity to the former Soviet Union. The U.S. Army and U.S. Navy built radar, sonar, and communication installations, and an airstrip was constructed by the Civil Aeronautics Commission along with lodgings and support buildings. (Himes-Cornell *et al*. 2013).

In the years leading up to the 1971 passage of ANCSA, St. Lawrence Island's status as a federal reserve meant that Savoonga and the neighboring community of Gambell underwent a different process during land claims settlement than other Alaska Native villages. Under ANCSA, most Alaska Native villages received a combination of money and land entitlement. In addition, previous federal reserves were granted land ownership under ANCSA and controlled by Native corporations. Because Savoonga and Gambell were located within the St. Lawrence Island Reserve, they had the option to choose a larger land entitlement in lieu of the monetary portion of the ANCSA settlement. Together, the communities of Gambell and Savoonga received title to the entire 1.136-million acres of land that made up the former St. Lawrence Island Reserve. Today, St. Lawrence Island remains jointly owned by Savoonga and Gambell (Himes-Cornell *et al*. 2013).

Savoonga is a traditional St. Lawrence Yup'ik village with a subsistence lifestyle based on walrus and whale hunting. Due to the island's isolation, most residents are bilingual – Siberian Yup'ik is still the first language, with English as the second language (Himes-Cornell *et al*. 2013). Subsistence harvest of marine

[86] The 1960 census showed 49 residents of King Island; by the time of the 1970 census the population was zero as residents of the island at least some of whom would previously typically spend summers in Nome and winter on King Island became year-round residents of Nome (https://dcced.maps.arcgis.com/apps/MapJournal/index.html?appid=2d2fac3050df42b38377ba96e129c6b0#, accessed 8/17/2019)

[87] Council, about 60 miles northeast of Nome and approximately 15 miles northwest of White Mountain, traditionally a summer fish camp area, became a townsite in the Gold Rush era. While the town itself is now abandoned, the area is now primarily used as a fish camp site by residents of Nome and for recreation by Nome and White Mountain residents.

mammals and fish provides a foundation for Savoonga's local economy. Important subsistence species include walrus, seal, fish, and bowhead and gray whales (Himes-Cornell *et al.* 2013).

Savoonga was incorporated in 1969 as a 2nd Class City. The authorized traditional entity, recognized by the BIA, is the Native Village of Savoonga. The ANCSA village corporation, Kukulget, Incorporated, that runs businesses in tourism and gravel sales. Savoonga is also a member village of Kawerak Inc.

## 6.4.3 Demographics

Demographic and socioeconomic characteristics for the communities in the region identified as potentially BSAI halibut-dependent are presented in Table 64. The majority of the communities in NSEDC can be considered small, rural communities with a high percentage of Alaska Native residents. However, the city of Nome is a regional economic center and has different demographic and socioeconomic characteristics compared to other coastal communities in the NSEDC.

Nome, with a population of approximately 3,600 in 2010, is the largest community in the region and has a relatively even split between Alaska Native and non-Native residents. In contrast, Savoonga is a much smaller community with a total population of less than 700 in 2010, with approximately 95 percent of those residents indicating they were Alaska Native. The population in Nome is also more diverse than in Savoonga: the percentage of minority residents in Savoonga is very similar to its percentage of Alaska Native residents while Nome's percentage of minority residents is almost 15 percent higher than its percentage of Alaska Native residents.

Socioeconomic indicators are very different between the two communities as well. As shown in Table 64, Nome had a much higher per capita income, median household income, and median family income than Savoonga. The percentage of low-income residents in Nome was approximately 12 percent, while approximately 43 percent of Savoonga residents were considered low-income.

**Table 64. NSEDC Region BSAI Halibut Dependent Communities Selected Demographic Indicators**

| Community | Total Population | Alaska Native Residents (percent of total population) | Minority Residents (percent of total population) | Residents Living in Group Quarters (percent of total population) | Per Capita Income (dollars) | Median Household Income (dollars) | Number of Family Households | Median Family Income (dollars) | Low-Income Residents (percent of total population) |
|---|---|---|---|---|---|---|---|---|---|
| Nome | 3,598 | 54.8% | 70.5% | 5.3% | $30,744 | $81,389 | 916 | $78,750 | 11.8% |
| Savoonga | 671 | 94.5% | 95.1% | 0.0% | $9,659 | $37,708 | 177 | $39,688 | 43.1% |

*Defined as those persons living below the poverty threshold by the U.S. Census Bureau in the 2013-2017 American Community Survey. As a point of reference, a family of four (two adults and two children) had a poverty threshold of $25,465 in 2018.

Source: US Census 2010; US Census 2018.

## 6.4.4 Local Economy

The main driver of the local economy in the region is commercial salmon fishing and other commercial fishing along the Yukon River. The establishment of shore-based processors in the region has resulted in growth of commercial fishing in the area, despite its relative remoteness. Mining is another economic driver in the region, with some tin and polymetallic resources found in the area and several small gold mines in operation around Nome. Some tourism occurs in conjunction with the Iditarod, the last third of which runs from Unalakleet to Nome within the NSEDC region. Sportfishing in the region, however, is not as prevalent as it is in other a number of other areas of the state (Himes-Cornell *et al.* 2013).

According to the NSEDC website, NSEDC began supporting regional fisheries in 1993 through joint ventures with Glacier Fish Company for buying and processing pink salmon and herring, and NSEDC-run operations for buying, processing and marketing other species of salmon, red king crab, halibut, and bait. In 1995, NSEDC established Norton Sound Seafood Products, which manages NSEDC's commercial seafood activities in the region. Norton Sound Seafood Products operates multiple facilities in the region including processing plants in Unalakleet, Savoonga, and Nome, as well as buying stations at Elim, Golovin, and Shaktoolik.[88]

According to senior NSEDC management, the plant in Unalakleet focuses almost exclusively on processing salmon, although a modest amount of herring is processed for use as bait in the local crab and halibut fisheries. In contrast, the plant in Savoonga has in the past focused exclusively on halibut processing but has recently run "a little cod" as well, as there is interest in diversifying the Savoonga community fisheries. The plant in Nome includes halibut as well as salmon and crab processing among its primary activities and also processes saffron cod (locally known as tomcod) for bait. The Nome plant has also run some Pacific cod and has recently made investments in capacity (e.g., the acquisition of a fillet machine) to do more, but the Pacific cod fishery is described by senior NSEDC management as still being in its infancy at the plant. NSEDC is similarly interested in developing a local, small boat directed Pacific cod fishery and has reportedly taken initial steps toward that end.

## 6.4.5 Engagement in the Commercial BSAI Halibut Fishery

### 6.4.5.1 Catcher Vessels with Local Ownership Addresses and Ex-Vessel Gross Revenues

Table 65 provides trend information on the number of vessels with ownership addresses in NSEDC region communities that were active in the BSAI/Area 4 commercial halibut fisheries 2010-2018. Unlike Table 31, which lists only those two NSEDC region communities with an annual average of two or more active BSAI halibut catcher vessels on an annual average basis (Nome and Savoonga), this table shows all regional communities with even one vessel active in any one year during 2010-2018 (i.e., an additional three regional communities). As shown, average annual participation ranged widely during the period 2010-2018: three regional communities (Gambell, Unalakleet, and White Mountain) participated with only one vessel and in only one year (2013 for Gambell and 2012 for the other two) for an annual average of 0.1 vessels per year, while Savoonga had an annual average of over 11 vessels participating in the fishery.

[88] https://www.nsedc.com/fisheries/nssp/ accessed 8/31/19.

**Table 65. Individual BSAI Halibut Catcher Vessels by Community of Vessel Historic Ownership Address, NSEDC Region Communities, 2008-2018 (number of vessels)**

| Region | Community | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 (number) | Annual Average 2010-2018 (percent) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NSEDC | Gambell | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.1 | 0.6% |
| NSEDC | Nome | 8 | 8 | 7 | 4 | 5 | 5 | 5 | 7 | 6 | 6.1 | 34.6% |
| NSEDC | Savoonga | 11 | 10 | 14 | 13 | 13 | 13 | 10 | 10 | 7 | 11.2 | 63.5% |
| NSEDC | Unalakleet | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.6% |
| NSEDC | White Mountain | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.6% |
| **NSEDC** | **Regional Subtotal** | **19** | **18** | **23** | **17** | **19** | **18** | **15** | **17** | **13** | **17.7** | **100.0%** |

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Information on BSAI halibut ex-vessel gross revenues of vessels with ownership addresses in the regional communities, to the extent possible within confidentiality constraints, is provided in Table 33. If a regional total is to be calculated, only Savoonga or Nome but not both could be broken out separately. Given the larger number of vessels associated with Savoonga, information for that community is presented. As shown, BSAI halibut ex-vessel gross revenues for Savoonga ranged from $53,000 to $227,000 per year during 2010-2018, averaging $176,000 per year. Nome and the other active NSEDC communities combined averaged $273,000 per year during that same period (and with the exception of 2012 and 2014, all ex-vessel gross revenues for the period were associated with vessels with Nome ownership addresses. Information on BSAI halibut vessel diversity, as measured by relative dependency on BSAI halibut ex-vessel gross revenues compared to total ex-vessel gross revenues for all species, gear, and area fisheries pursued by those same vessels on an annual average basis 2010-2018, is provided in Table 34. As shown, the Savoonga halibut fleet was 100 percent dependent on the halibut fishery (i.e., those vessels did not participate in any other commercial fisheries), while the analogous dependency figure for the Nome/all other NSEDC communities (except Savoonga) halibut fleet was 24 percent (in other words, vessels with Nome, Gambell, Unalakleet, and White Mountain ownership addresses that participated in the BSAI halibut fishery had ex-vessel gross revenues from other fisheries that were about three times higher than the ex-vessel gross revenues from the halibut fishery itself).

For that same 2010-2018 period, Table 35 shows the annual average number of BSAI halibut catcher vessels with local ownership addresses, the annual average number all commercial fishing catcher vessels (all species, gear, and area fisheries) with local ownership addresses (i.e., the local "community commercial fishing fleet"), BSAI halibut ex-vessel gross revenues for the community commercial fishing fleet, total ex-vessel gross revenue for the commercial fishing fleet (from all species, gear, and area fisheries), and the percentage of halibut ex-vessel gross revenues as a percentage of the total ex-vessel gross revenues of the community commercial fishing fleet (i.e., the "dependency" of the community fleet on BSAI halibut as measured in the proportion of ex-vessel revenues derived from that fishery). For Savoonga, the community fleet dependency on BSAI halibut was 100 percent for the period. In other words, no vessels with Savoonga ownership addresses pursued any commercial fisheries other than the BSAI halibut fishery. For Nome, Gambell, Unalakleet, and White Mountain community commercial fishing fleets combined, the level dependency on BSAI halibut compared to total ex-vessel gross revenues from all fisheries combined was 12 percent for the period 2010-2018.

It is important to note that from the NSEDC perspective, engagement in the halibut fishery and development of a local Pacific cod fishery is not taking place in a vacuum. Of general concern to all fisheries in the region is the northern movement of fish stocks due to changes in ocean temperatures and the related lack of knowledge of changes in behaviors of species of commercial (and subsistence)

importance in response to the changing environment. NSEDC senior management noted that they are actively involved in the pursuit of that type of data, having recently worked with the IPHC on a regional halibut pop-up satellite tagging project.

Another challenge facing NSEDC in terms of local halibut fishery management is accommodating the needs of two very different local halibut fleets and their associated processing operations in the region. Savoonga has a much smaller scale (16- to 24-foot aluminum skiff-based) catcher vessel fleet that hauls skates by hand whereas Nome has a larger vessel, hydraulics equipped, higher capacity fleet. To accommodate the two fleets, local harvests are staggered, with Savoonga getting a "head start" on halibut harvest, given the ability of Nome vessels to catch higher volumes of halibut in a shorter period of time, and NSEDC has leased additional A-share halibut IFQ and pursued leasing additional CDQ halibut for the benefit of the Savoonga fleet, but the opportunities to do have proven to be limited. In short, the potential for competing interests between the two fleets and local processing operations is an acknowledged issue that NSEDC routinely seeks to address as a part of their ongoing in-region fishery management role, according to senior NSEDC staff.[89]

### 6.4.5.2 Other Measures of CDQ Community BSAI Halibut Harvest Engagement

As shown in Table 66, the only community in the NSEDC region with any residents who hold halibut quota shares is Nome. Nome is located in IPHC Area 4E.

**Table 66. Halibut Quota Share Holders and Quota Share Units Held, NSEDC Region Communities, 2019**

| Community | Community Located in IPHC Area | Number of Unique Quota Share Holders | Total Quota Share Units Held | Percent of QS Units Held in Region |
|---|---|---|---|---|
| Nome | 4E | 2 | 238,250 | 100.00% |
| **Regional Total** | | **2** | **238,250** | **100.00%** |

Source: https://www.fisheries.noaa.gov/sites/default/files/akro/19ifqunitfb.csv. Accessed 8/14/19

NSEDC region community halibut quota share holding is exclusively concentrated in Nome, but participation in the commercial halibut fishery is not.

- Communities in the NSEDC region span two different IPHC regulatory areas. Nome and Savoonga, the two communities shown as directly active in the BSAI halibut fishery in the 2010-2018 dataset used for this analysis, are located in the two different areas (see Figure 1).
    - Nome and all other NSEDC communities except Savoonga, Gambell, and Diomede, are located in Area 4E. Area 4E has a 100 percent CDQ reserve that is allocated 70 percent to CVRF and 30 percent to BBEDC.
    - Savoonga and Gambell, located on St. Lawrence Island, and Diomede, located on Little Diomede Island, are the only communities in Area 4D. Area 4D has a 30 percent CDQ reserve that is allocated 30 percent to NSEDC, 26 percent to BBEDC, 24 percent to

[89] Savoonga was selected for characterization as a case study in a recent article on CDQs and non-economic factors in community well-being due to the complexities of its relationship with Nome and the NSEDC in the regional halibut fishery (Lyons, et al., 2019).

CVRF, and 20 percent to the Yukon Delta Fisheries Development Association (YDFDA) CDQ group.

- One individual in Nome holds quota shares in Area 4E[90] exclusively; another holds quota shares in Areas 3A and 3B (but none in 4E).
- Savoonga, where no local residents hold halibut quota shares, actively participates in the commercial halibut fishery exclusively by accessing CDQ quota.

Another important way that communities are engaged in the commercial halibut fishery harvest sector, beyond local individuals owning vessels active in the fishery or holding halibut quota share units, is through employment of local residents as crew members on vessels participating in the fishery. As noted in Section 4.5.2, however, sources of systematically collected quantitative data on crew employment and earnings are not available for the halibut fishery in this or other regions.

#### 6.4.5.3 Shore-Based Processors and First Wholesale Gross Revenues

As shown in Table 36, one shore-based processor in Nome and one in Savoonga appear in the dataset used for this analysis as having accepted BSAI halibut deliveries each year during the period 2010-2018. All revenue data for these processors individually or combined are confidential. As a result, Table 37 combines revenue data for the two processors in the NSEDC region with the data from processors in the BBEDC region communities of Togiak and Twin Hills that would also otherwise be confidential. As noted in Section 4.5.3, first wholesale gross revenue data for shore-based processors are not available, so ex-vessel values associated with deliveries of BSAI halibut at these plants are used as a rough proxy. As shown in Table 37 annual average ex-vessel value of landings for the four communities was approximately $620,000. This represented approximately seven percent of all ex-vessel values associated with all deliveries of all species at the involved plants (Table 38) as well as all of the plants operating in those communities combined (Table 39), as the plants that were involved in halibut processing were the only plants active in those communities.

### 6.4.6 Engagement in the Subsistence BSAI Halibut Fishery

As described in an earlier NPFMC analysis (AECOM 2015)[91] for those NSEDC communities for which subsistence data are available, the community with the largest number of estimated halibut subsistence fishermen was Nome, with the statistics for the Nome Eskimo Community and the City of Nome combined. For these, the average estimated numbers of halibut fishermen for 2009-2012 were 5.8 and 6.3, with 49.5 and 34.0 estimated average halibut caught, representing 1,146.3 and 685.3 pounds, respectively. Savoonga has an average of 7.3 fishermen reported from 2009-2011. The average number of halibut landed for 2009-2011 was 35.0, representing an estimated 905.0 pounds.[92]

Table 67 presents selected information from the ADFG Community Information System for the potentially substantially engaged or substantially dependent halibut communities in the NSEDC region as selected by initial screening criteria. As discussed in Section 6.1.6, while these data are often dated (e.g., 2006 is the most recent year available for Savoonga), they still represent the most comprehensive data encompassing all subsistence resources available that is comparable across regions. As shown, however,

[90] As noted in the discussion contained in the footnote in Section 6.1.5.2, any individuals shown in the data as holding quota share units in Area 4E, which has a 100 percent CDQ reserve, did not qualify for compensatory shares. As there is no TAC set in 4E, those shares are not issued quota pounds (i.e., they cannot be fished and typically have no sale value).

[91] See Table 2-8 in that analysis (Proposed Bering Sea/Aleutian Islands Halibut PSC Limit Revisions Appendix C: Community Analysis)

[92] Data for Savoonga for 2012 are confidential and are not included in the average.

only one of the two NSEDC region potentially halibut dependent communities (Savoonga) is represented in the data. In Savoonga, half of all households are reported as using subsistence halibut, while the percentage of halibut of all subsistence fish harvested is eight percent and the percentage of retention of subsistence halibut from commercial fishing is approximately 11 percent.

**Table 67. Selected CSIS Halibut, Fish, and All Resources Subsistence Harvest Information, NSEDC Region Communities, 2006**

| Community | Year(s) Data Are Available | Percent Using Halibut | Percent Harvesting Halibut | Halibut Reported Pounds Harvested | Halibut Estimated Total Pounds Harvested | All Fish Estimated Total Pounds Harvested | Halibut as a Percentage of Estimated Total Pounds of All Fish Harvested | All Resources Estimated Total Pounds Harvested | Halibut as a Percentage of Estimated Total Pounds of All Resources Harvested | Estimated Pounds of Subsistence Halibut Harvested Retained from Commercial Fisheries | Percent of Subsistence Halibut Estimated Total Pounds Harvested Retained from Commercial Fisheries |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nome | none | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Savoonga | 2006 | 49.6% | 48.9% | 6,014 | 6,269 | 76,422 | 8.2% | 1,474,291 | 0.4% | 660 | 10.5% |

Source:ADFG Community Subsistence Information System https://www.adfg.alaska.gov/sb/CSIS/index.cfm?ADFG=harvInfo.harvestCommSelComm accessed 8/21/2019.

Nome community leaders have stated that residents rely on salmon (chum and coho), seal, walrus, crab, whale, halibut, and herring for subsistence (Himes-Cornell *et al.* 2013). Much of the subsistence salmon harvest that occurs in the community is done at seasonal fish camps outside of the community itself. For the 2000 through 2010 period, between 134 and 877 Nome households per year were issued subsistence salmon permits. Of harvests that were reported, pink was the most heavily harvested salmon species over time, with an average harvest of 7,567 fish per year. Sockeye, coho, and chum salmon were the next most heavily harvested species, with an average of 3,133 sockeye, 1,723 coho, and 1,570 chum harvested per year. A small number of Chinook were also harvested by Nome residents each year.

Nome residents were issued between 10 and 25 SHARC cards each year between 2003 and 2010. In 2010, 23 SHARC cards were issued, 7 were fished, and 941 pounds of halibut were harvested. The only other years during that period when subsistence halibut harvest was reported on SHARCs were 2008 and 2009, when 1,145 pounds. and 1,281 pounds were harvested, respectively. Subsistence harvest of land and marine mammals is also a consistent part of the community's wild food source. From 2000 through 2010, AFSC was able to report harvest of walrus, polar bears, and beluga whales. Walrus harvests were reported from 2000 through 2007, ranging from 4 to 56 animals. Three total polar bear harvests were reported – two animals in 2001 and one in 2007. Between two and 11 beluga whales were harvested in the years reported during this period; the report notes that 2007 through 2010 harvest were part of a combined harvest total for the communities of Nome and Brevik.

In Savoonga, subsistence harvests are focused on marine mammals (including whale, seal, and walrus) and reindeer (Himes-Cornell *et al.* 2013). From 2000 to 2010, average harvest was available for walrus (546) and polar bears (6). Harvest information on beluga whale, sea otter, sea lion, and seal were not reported during that period. Data for annual subsistence halibut harvest show a substantial decline in the number of residents holding SHARC cards between 2003 and 2010, as well as a decline in the number of SHARC cards reported as fished and the number of pounds of halibut harvested per year.

## 6.4.7 Engagement in the Commercial BSAI Groundfish Fishery

Direct NSEDC individual community participation in the BSAI groundfish fishery over the period 2010-2018 was limited to one shore-based processor operating in Nome that accepted relevant BSAI groundfish

deliveries each year during this period. These deliveries included both Pacific cod and tomcod and included fish that were flagged in the data as caught during targeted cod fishing as well as during halibut fishing. All volume and revenue information related to this processing activity is confidential, but a general knowledge of the industry and the operator's website suggest that at present this is not a primary focus of the plant, although per senior NSEDC management, initial steps in developing a local Pacific cod fishery have been taken (see Section 6.4.4). No catcher vessels with ownership addresses in the region are shown in the data as participating in the BSAI groundfish fishery in any year 2010-2018.

## 6.4.8 CDQ Group Direct BSAI Halibut and/or Groundfish Engagement

In addition to participating in the BSAI halibut and/or BSAI groundfish fisheries through use of CDQ quota ownership in a number direct and indirect of ways NSEDC, like other CDQ entities, has also invested in capital assets in the catcher vessel and/or catcher/processor sectors as another avenue to meet the economic and social goals of the CDQ program. Among vessels shown in the dataset used for analysis as actively participating in the sectors of the BSAI groundfish fishery relevant to this analysis in at least one year 2010-2018, eight of those were listed in the most recent CDQ ownership attribution RIR (NMFS 2017) as owned at least in part by NSEDC. These vessels are listed in Table 68.

**Table 68. CDQ Ownership of Vessels Participating in Relevant BSAI Groundfish Sectors, NSEDC, 2010-2018**

| | ADFG Number | Vessel Name | CDQ Group | CDQ Ownership |
|---|---|---|---|---|
| 1 | 60407 | ALASKA OCEAN | NSEDC | 38% |
| 2 | 57228 | ARICA | NSEDC | 9% |
| 3 | 55921 | CAPE HORN | NSEDC | 9% |
| 4 | 34905 | GLACIER BAY* | NSEDC | 100% |
| 5 | 48075 | NORTHERN GLACIER | NSEDC | 38% |
| 6 | 56991 | PACIFIC GLACIER* | NSEDC | 38% |
| 7 | 51873 | REBECCA IRENE | NSEDC | 9% |
| 8 | 57211 | UNIMAK | NSEDC | 9% |

*Two vessels have changed ownership since NOAA 2017: Pacific Glacier, now named the Phoenix, and the Glacier Bay show new ownership in the CFEC database as of 2019. According to senior NSEDC personnel, these vessels are no longer owned in part by NSEDC.
Note (1): Vessel ownership addresses include Homer AK (1) and Seattle WA (7).
Note (2): Each of the listed vessels participated in one or more of the BSAI groundfish TLAS catcher vessel, Amendment 80 catcher/processor, hook-and-line catcher/processor, and/or CDQ sectors during at least one year 2010-2018.
Source: NOAA 2017, AKFIN 2019.

# 6.5 Other CDQ Regional Engagement in the BSAI Groundfish and Halibut Fisheries

## 6.5.1 Overview

Direct BBEDC community participation in the relevant BSAI groundfish fisheries was limited to one shore-based processor in one community (Twin Hills) taking one or more groundfish deliveries in one year (only) 2010-2018. As identified through initial screening criteria, BSAI communities potentially substantially engaged in or dependent upon the BSAI/Area 4 halibut fishery in BBEDC include Dillingham, Togiak, and Twin Hills, but none of these communities are considered dependent on the fishery. Given the lack of dependency on the relevant commercial fisheries, regional and community characterization is briefer in this section. BBEDC communities in addition to those already mentioned include Aleknagik, Clarks Point, Egegik, Ekuk, Ekwok, King Salmon, Levelock, Manokotak, Naknek, Pilot Point, Portage Creek, Port Heiden (Meschick), South Naknek, and Ugashik.

No CDQ member communities of YDFDA are shown in the 2010-2018 dataset as having directly participated in the BSAI groundfish and/or BSAI halibut commercial fisheries. Given the lack of direct engagement the relevant commercial fisheries by vessels with local ownership addresses or locally operating shore-based processors, regional and community characterization has not been included section, although summary information on YDFDA CDQ group ownership of vessels has been included in Section 6.5.5. YDFDA communities include Alakanuk, Emmonak, Grayling, Kotlik, Mountain Village, and Nunam Iqua (Sheldon Point).

## 6.5.2 Engagement in the Commercial BSAI Halibut Fishery

### 6.5.2.1 Harvester Engagement

#### Catcher Vessels with Local Ownership Addresses and Ex-Vessel Gross Revenues

Table 69 provides trend information on the number of vessels with ownership addresses in BBEDC region communities that were active in the BSAI/Area 4 commercial halibut fisheries 2010-2018. Unlike Table 31, which lists only those two communities (Dillingham and Togiak) with an annual average of two or more active BSAI halibut catcher vessels on an annual average basis (one of the initial screening criteria for halibut dependency), this table shows all regional communities with even one vessel active in any one year during 2010-2018 (i.e., an additional six regional communities). As shown, average annual participation ranged widely during the period 2010-2018: two regional communities (Aleknagik and King Salmon) participated with only one vessel and in only one year (2012 and 2010, respectively) for an annual average of 0.1 vessels per year, while Dillingham and Togiak had annual averages of over two and 12 vessels, respectively, participating in the fishery. The remaining communities Clark's Point, Manokotak, Naknek, and South Naknek averaged between 0.2 and 0.7 vessels active per year during the 2010-2018 period with no clear pattern of entering and exiting the fishery, although the region as a whole saw a general increase in vessels with BBEDC community ownership addresses becoming active in the BSAI halibut fishery over the period.

**Table 69. Individual BSAI Halibut Catcher Vessels by Community of Vessel Historic Ownership Address, BBEDC Region Communities, 2008-2018 (number of vessels)**

| Region | Community | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Annual Average 2010-2018 (number) | Annual Average 2010-2018 (percent) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BBEDC | Aleknagik | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.7% |
| BBEDC | Clarks Point | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0.2 | 1.3% |
| BBEDC | Dillingham | 0 | 1 | 2 | 3 | 2 | 2 | 2 | 3 | 4 | 2.1 | 12.8% |
| BBEDC | King Salmon | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.7% |
| BBEDC | Manokotak | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 1 | 0.7 | 4.0% |
| BBEDC | Naknek | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 2 | 0.7 | 4.0% |
| BBEDC | South Naknek | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0.3 | 2.0% |
| BBEDC | Togiak | 8 | 12 | 16 | 10 | 13 | 13 | 14 | 13 | 12 | 12.3 | 74.5% |
| **BBEDC** | **Regional Subtotal** | **10** | **13** | **21** | **14** | **15** | **16** | **19** | **21** | **20** | **16.6** | **100.0%** |

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Information on BSAI halibut ex-vessel gross revenues of vessels with ownership addresses in the regional communities, to the extent possible within confidentiality constraints, is provided in Table 33. If a regional total is to be calculated, only Togiak or Dillingham but not both could be broken out separately. Given the larger number of vessels associated with Togiak, information for that community is presented. As shown, BSAI halibut ex-vessel gross revenues for Togiak ranged from $106,000 to $270,000 per year during 2010-2018, averaging $177,000 per year. Dillingham and the other active BBEDC communities combined averaged $71,000 per year during that same period. Information on BSAI halibut vessel diversity, as measured by relative dependency on halibut compared to all species, gear, and area fisheries pursued by those same vessels on an annual average basis 2010-2018, is provided in Table 34. As shown, the Togiak BSAI halibut fleet was 19 percent dependent on the halibut fishery (i.e., those vessels derived about 80 percent of their total ex-vessel gross revenues from fisheries other than the BSAI halibut fishery), while the analogous dependency figure for the Dillingham/all other BBEDC communities (except Togiak) halibut fleet was 31 percent (in other words, vessels with Dillingham, Aleknagik, Clark's Point, King Salmon, Manokotak, Naknek, and South Naknek ownership addresses that participated in the BSAI halibut fishery had ex-vessel gross revenues from other fisheries that were more than twice as much as the ex-vessel gross revenues from the halibut fishery itself).

For that same 2010-2018 period, Table 35 shows the annual average number of BSAI halibut catcher vessels with local ownership addresses, the annual average number all commercial fishing catcher vessels (all species, gear, and area fisheries) with local ownership addresses (i.e., the local "community commercial fishing fleet"), BSAI halibut ex-vessel gross revenues for the community commercial fishing fleet, total ex-vessel gross revenue for the commercial fishing fleet (from all species, gear, and area fisheries), and the percentage of halibut ex-vessel gross revenues as a percentage of the total ex-vessel gross revenues of the community commercial fishing fleet (i.e., the "dependency" of the community fleet on BSAI halibut as measured in the proportion of ex-vessel revenues derived from that fishery). For Togiak, the community fleet dependency on BSAI halibut was seven percent for the period. For Dillingham, Aleknagik, Clark's Point, King Salmon, Manokotak, Naknek, and South Naknek community commercial fishing fleets combined, the level dependency on BSAI halibut compared to total ex-vessel gross revenues from all fisheries combined was 0.5 percent for the period 2010-2018, which points to the overwhelming importance of the salmon fisheries to the communities of the Bristol Bay region.

## Other Measures of CDQ Community BSAI Halibut Harvest Engagement

As shown in Table 70, communities in the BBEDC region whose residents hold halibut quota shares are located in Area 4E. As detailed in the bulleted notes, halibut quota share holding by local residents is heavily focused on Area 4E.

**Table 70. Halibut Quota Share Holders and Quota Share Units Held, BBEDC Region Communities, 2019**

| Community | Community Located in IPHC Area | Number of Unique Quota Share Holders | Total Quota Share Units Held | Percent of QS Units Held in Region |
|---|---|---|---|---|
| Dillingham | 4E | 5 | 1,508,315 | 99.34% |
| King Salmon | 4E | 1 | 798 | 0.05% |
| Naknek | 4E | 5 | 6,655 | 0.44% |
| South Naknek | 4E | 2 | 1,416 | 0.09% |
| Togiak | 4E | 5 | 892 | 0.06% |
| Twin Hills | 4E | 1 | 270 | 0.02% |
| **Regional Total** | | **19** | **1,518,346** | **100.00%** |

Source: https://www.fisheries.noaa.gov/sites/default/files/akro/19ifqunitfb.csv. Accessed 8/14/19

With the exception of the holdings of CDQ flagged[93] quota shares, halibut quota shares held by individuals in BBEDC region communities are exclusively Area 4E shares. [94] Ownership of CDQ flagged quota shares is more common in the BBEDC region than in other regions, but still involve only six individuals in five communities.

- All BBEDC communities are located in Area 4E (see Figure 1). Area 4E has a 100 percent CDQ reserve that is allocated 30 percent to BBEDC and 70 percent to CVRF.
- BBEDC itself owns 99.95 percent of all of the halibut quota share units held in Dillingham, with none of those being Area 4E quota shares.
- Individuals hold 811 of the 1.5 million quota share units held in Dillingham. Three individuals hold quota shares in Area 4E exclusively. Another individual holds quota shares in Area 4E plus CDQ flagged quota shares in Areas 2C, 3B, and 4A.
- One individual in King Salmon holds quota shares in Area 4E plus CDQ flagged quota shares in Areas 3B and 4A.
- Four individuals in Naknek hold quota shares in Area 4E exclusively. Another individual holds quota shares in Area 4E plus CDQ flagged quota shares in Areas 2C, 3A, 3B and 4A.
- Two individuals in South Naknek hold quota shares in Area 4E exclusively.
- Two individuals in Togiak hold quota shares in Area 4E exclusively. Two individuals hold quota shares in Area 4E plus CDQ flagged quota shares in Areas 2C and 4A.

[93] For more information on CDQ flagged shares, see the discussion contained in the footnote in Section 6.1.5.2.

[94] As noted in the discussion contained in the footnote in Section 6.1.5.2, any individuals shown in the data as holding quota share units in Area 4E, which has a 100 percent CDQ reserve, did not qualify for compensatory shares. As there is no TAC set in 4E, those shares are not issued quota pounds (i.e., they cannot be fished and typically have no sale value).

- One individual in Twin Hills holds quota shares in Area 4E plus CDQ flagged quota shares in Areas 2C, 3A, 3B and 4A.

Another important way that communities are engaged in the commercial halibut fishery harvest sector, beyond local individuals owning vessels active in the fishery or holding halibut quota share units, is through employment of local residents as crew members on vessels participating in the fishery. As noted in Section 4.5.2, however, sources of systematically collected quantitative data on crew employment and earnings are not available for the halibut fishery in this or other regions.

#### 6.5.2.2 Shore-Based Processors and First Wholesale Gross Revenues

As shown in Table 36, during 2010-2018, one shore-based processor operating in Twin Hills accepted BSAI halibut deliveries each year and one shore-based processor operating in Togiak accepted deliveries each of the three most recent years covered by the data (2016-2018) only. All revenue information associated with BSAI halibut processing in these communities is confidential. To allow reporting on a regional (or combined regions) basis, data from these BBEDC region plants have been aggregated with data from plants in the NSEDC region and are presented in detail in Table 37, Table 38, and Table 39, and summarized in Section 6.4.5.3. As noted in Section 4.5.3, first wholesale gross revenue data for shore-based processors sufficient to calculate processing diversity are not available.

### 6.5.3 Engagement in the Subsistence BSAI Halibut Fishery

Table 71 presents selected information from the ADFG Community Information System for the potentially substantially engaged or substantially dependent halibut communities in the BBEDC region as selected by initial screening criteria. As discussed in Section 6.1.6, while these data are often dated (e.g., 1999 is the most recent year available for Twin Hills), they still represent the most comprehensive data encompassing all subsistence resources available that is comparable across regions. For all three communities shown (Dillingham, Togiak, and Twin Hills), in the most recent year for which data are available (2010, 2008, and 1999 respectively) estimated subsistence harvest of halibut is less than 120 pounds, and no retention of subsistence halibut from commercial fisheries is reported. For all three communities for all reporting years, halibut accounts for less than one percent of all subsistence fish harvest by weight (and accounts one-tenth of one percent or less in three of the five reporting years of the three communities combined).

**Table 71. Selected CSIS Halibut, Fish, and All Resources Subsistence Harvest Information, BBEDC Region Communities, Various Years**

| Community | Year(s) Data Are Available | Percent Using Halibut | Percent Harvesting Halibut | Halibut Reported Pounds Harvested | Halibut Estimated Total Pounds Harvested | All Fish Estimated Total Pounds Harvested | Halibut as a Percentage of Estimated Total Pounds of All Fish Harvested | All Resources Estimated Total Pounds Harvested | Halibut as a Percentage of Estimated Total Pounds of All Resources Harvested | Estimated Pounds of Subsistence Halibut Harvested Retained from Commercial Fisheries | Percent of Subsistence Halibut Estimated Total Pounds Harvested Retained from Commercial Fisheries |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dillingham | 1984 | no data | 0 | 0 | 0 | 393,781 | 0.0% | 597,394 | 0.0% | 0 | -- |
| Dillingham | 2010 | 19.0% | 1.0% | 17 | 88 | 316,260 | 0.0% | 486,532 | 0.0% | 0 | 0.0% |
| Togiak | 1999 | 15.6% | 9.4% | no data | 702 | 77,617 | 0.9% | 179,005 | 0.4% | no data | -- |
| Togiak | 2008 | 32.5% | 7.5% | 36 | 85 | 135,782 | 0.1% | 243,208 | 0.0% | no data | -- |
| Twin Hills | 1999 | 25.0% | 16.7% | 60 | 115 | 18,833 | 0.6% | 34,398 | 0.3% | no data | -- |

Source:ADFG Community Subsistence Information System https://www.adfg.alaska.gov/sb/CSIS/index.cfm?ADFG=harvInfo.harvestCommSelComm accessed 8/21/2019.

## 6.5.4 Engagement in the Commercial BSAI Groundfish Fishery

Direct participation of BBEDC communities in the relevant BSAI groundfish fisheries was limited to one shore-based processor in Twin Hills that accepted one or more deliveries in 2017 (only). All ex-vessel gross revenue information related to this catcher vessel activity is confidential.

## 6.5.5 CDQ Group Direct BSAI Halibut and/or Groundfish Engagement

In addition to participating in the BSAI halibut and/or BSAI groundfish fisheries through use of CDQ quota ownership in a number direct and indirect of ways BBEDC and YDFDA, like other CDQ entities, have also invested in capital assets in the catcher vessel and/or catcher/processor sectors as another avenue to meet the economic and social goals of the CDQ program. Among vessels shown in the dataset used for analysis as actively participating in the sectors of the BSAI groundfish fishery relevant to this analysis in at least one year 2010-2018, 10 of those were listed in the most recent CDQ ownership attribution RIR (NMFS 2017) as owned at least in part by NSEDC (Table 72) and four as owned at least in part by YDFDA (Table 73).

**Table 72. CDQ Ownership of Vessels Participating in Relevant BSAI Groundfish Sectors, BBEDC, 2010-2018**

| | ADFG Number | Vessel Name | CDQ Group | CDQ Ownership |
|---|---|---|---|---|
| 1 | 41312 | ALASKAN DEFENDER | BBEDC | 50% |
| 2 | 62437 | ALASKAN LEADER | BBEDC | 50% |
| 3 | 57450 | ARCTIC FJORD | BBEDC | 40% |
| 4 | 31792 | ARCTIC PROWLER | BBEDC | 50% |
| 5 | 51672 | BERING DEFENDER | BBEDC | 50% |
| 6 | 74669 | BERING LEADER | BBEDC | 50% |
| 7 | 70435 | BRISTOL LEADER | BBEDC | 50% |
| 8 | 38431 | MORNING STAR* | BBEDC | 50% |
| 9 | 77393 | NORTHERN LEADER | BBEDC | 50% |
| 10 | 963 | WESTERN MARINER | BBEDC | 50% |

*One vessel has apparently changed names since NOAA 2017: Morning Star is now Northern Defender. It is unknown if this change is associated with a transaction that has changed CDQ ownership.
Note (1): Vessel ownership addresses include Lynden WA (4), Seattle WA (3), and Shoreline WA (3), with the latter two being a part of the Seattle MSA.
Note (2): Each of the listed vessels participated in one or more of the BSAI groundfish TLAS catcher vessel, hook-and-line catcher/processor, and/or CDQ sectors during at least one year 2010-2018.
Source: NOAA 2017, AKFIN 2019.

**Table 73. CDQ Ownership of Vessels Participating in Relevant BSAI Groundfish Sectors, YDFDA, 2010-2018**

| | ADFG Number | Vessel Name | CDQ Group | CDQ Ownership |
|---|---|---|---|---|
| 1 | 24255 | AMERICAN BEAUTY | YDFDA | 75% |
| 2 | 34855 | BARANOF | YDFDA | 41% |
| 3 | 35833 | COURAGEOUS | YDFDA | 90% |

Note (1): Vessel ownership addresses are all Seattle WA.
Note (2): Each of the listed vessels participated in one or more of the BSAI groundfish TLAS catcher vessel, hook-and-line catcher/processor, and/or CDQ sectors during at least one year 2010-2018.
Source: NOAA 2017, AKFIN 2019.

## 6.6 The Pacific Northwest Region

Among communities outside of Alaska, engagement in the BSAI groundfish fishery sectors likely to be most directly affected by the proposed action alternatives are highly concentrated in the Pacific Northwest states of Washington and Oregon, and specifically in the Seattle MSA, with a secondary concentration in Newport, Oregon.

The Seattle MSA, with a population of over 3.4 million persons in 2010, is at once the community most substantially engaged in many of the important North Pacific fisheries in general and the BSAI groundfish fishery in particular (as measured by absolute participation numbers of vessels and crew, as well as volume and value of landings from those vessels). Conversely, this area is among the least substantially dependent of the engaged communities on those fisheries based on the relative number of fishing jobs and economic value of those fisheries when compared to the size of the overall Seattle metropolitan labor pool and the scale, diversity, and resilience of its economy. For many of the fisheries off Alaska, especially the industrial-scale fisheries such as the BSAI groundfish fishery, it could be stated, paradoxically perhaps, that the major BSAI fisheries in their present configurations are more dependent upon Seattle than Seattle is dependent upon the fisheries. Regardless, a central part of Seattle's identity has always been as a fishing community, and there are still distinct areas within the Seattle MSA where concentrations of businesses and infrastructure are focused on the area's large and wide-ranging fleet and the support of that fleet and of the fishing industry in general. From an outside perspective, the Seattle fleet(s) and support operations might be considered components of interest-based rather than place-based communities; from the Seattle perspective, however, Seattle has been and remains a place-based North Pacific fishing community (NOAA 2014).

While community-level dependence on the BSAI groundfish fishery sectors relevant to this analysis is not a salient issue for the Seattle MSA or Newport, the scale of engagement is profound, as is the importance to some individual operations.

- In the BSAI groundfish TLAS catcher vessel sector, for the years 2010-2018, on an average annual basis, Washington and Oregon ownership address vessels accounted for 91.5 percent of all vessels in the sector; Seattle MSA alone accounted for 74.1 percent and Newport accounted for 11.3 percent of these vessels. Seattle MSA ownership address vessels alone accounted for 82.5 percent of all ex-vessel gross revenues of all BSAI groundfish TLAS catcher vessels on an annual average basis during this time period. Seattle MSA ownership address TLAS vessels were 7.9

percent dependent on relevant BSAI groundfish harvest as measured by a percentage of all ex-vessel gross revenues for these same vessels; the analogous figure for the Seattle MSA "community commercial catcher vessel fleet" as a whole was 7.2 percent.

- In the BSAI groundfish Amendment 80 catcher/processor sector, for the years 2010-2018, on an average annual basis, Seattle MSA ownership address vessels accounted 81.2 percent of all the vessels in the sector and for 81.6 percent of all sector first wholesale gross revenues. In terms of vessel dependency as measured by percentage of total first wholesale gross revenues, among Seattle MSA ownership address BSAI groundfish Amendment 80 catcher/processors, relevant BSAI groundfish first wholesale gross revenues accounted for 78.7 percent of the total first wholesale gross revenues for these same vessels for all area, species, and gear fisheries combined; the analogous figure for the Seattle MSA "community commercial catcher/processor fleet" as a whole was 24.8 percent.
- In the BSAI groundfish hook-and-line catcher vessel sector, for the years 2010-2018, on an average annual basis, Washington ownership address vessels accounted for 30.2 percent of all vessels in the sector; Seattle MSA alone accounted for 28.5 percent of these vessels, making it the community most highly engaged in this sector in any state. Washington, Oregon, and Other State ownership address vessels accounted for 68.4 percent of all ex-vessel gross revenues of all BSAI groundfish hook-and-line catcher vessels on an annual average basis during this time period. Washington, Oregon, and Other State ownership address hook-and-line catcher vessels were 20.0 percent dependent on relevant BSAI groundfish harvest as measured by a percentage of all ex-vessel gross revenues for these same vessels; the analogous figure for the Seattle MSA "community commercial catcher vessel fleet" as a whole was 0.4 percent.
- In the BSAI groundfish hook-and-line catcher/processor sector, for the years 2010-2018, on an average annual basis, Seattle MSA ownership address vessels accounted 80.8 percent of all the vessels in the sector and for 72.9 percent of all sector first wholesale gross revenues. In terms of vessel dependency as measured by percentage of total first wholesale gross revenues, among Seattle MSA ownership address BSAI groundfish hook-and-line catcher/processors, relevant BSAI groundfish first wholesale gross revenues accounted for 74.6 percent of the total first wholesale gross revenues for these same vessels for all area, species, and gear fisheries combined; the analogous figure for the Seattle MSA "community commercial catcher/processor fleet" as a whole was 11.6 percent.

Seattle is also substantially engaged in the BSAI/Area 4 halibut fishery as measured by ownership address of actively participating catcher vessels, among other indicators of engagement. Specifically:

- In the BSAI halibut catcher vessel sector, for the years 2010-2018, on an average annual basis, Seattle MSA ownership address vessels accounted for 9.0 percent of all vessels in the sector.
- Seattle MSA ownership address vessels alone accounted for 23.7 percent of all ex-vessel gross revenues of all BSAI halibut catcher vessels on an annual average basis during this time period. Seattle MSA ownership address BSAI halibut vessels were 19.4 percent dependent on relevant BSAI halibut harvest as measured by a percentage of all ex-vessel gross revenues for these same vessels; the analogous figure for the Seattle MSA "community commercial catcher vessel fleet" as a whole was 1.3 percent.

Additionally, the Seattle MSA is the location of regional or company headquarters for a number of the processing firms engaged in the relevant BSAI groundfish and halibut fisheries through ownership of shore-based processing plants operating in Alaska. It is also the ownership address base for stationary floating processors that do not have ownership location assigned in the 2010-2018 primary database used for this analysis. Further, the Seattle MSA has extensive fishery support services available, including some types or scale of services unavailable anywhere in Alaska. The region is an important supplier of

logistical services to the fleet, including corporate headquarters support, shipyard services, other repairs and maintenance, and supplies, as well as other services support, including the provision of financial, legal, and other services; marketing; and product shipment and storage (NOAA 2014).

## 6.7 Cross-Cutting Community Engagement Ties

Communities, of course, are not engaged in the relevant BSAI groundfish fisheries in isolation. Rather, they often have multiple interconnections or cross-cutting ties. In this section data are presented or referenced to illustrate the correspondence between: (1) community of ownership address of catcher vessels and catcher/processors and the community of homeport for those vessels; (2) community of ownership address of catcher vessels and catcher/processors and the community of ownership LLPs used on those vessels for the relevant fisheries; (3) community of ownership address of catcher vessels and catcher/processors and the communities where crew members on those vessels reside.

Data from 2018, the most recent data available, are used in the series of tables in this section, unless otherwise noted. In addition to these data representing a one-year snapshot, it should be noted that numbers may vary somewhat between tables in this section and between the tables in this section and those in Section 5 as the data may come from different sources and/or could not be linked in all cases (for example, in the available data matches between valid LLPs and active catcher vessels could not be made in all cases). These data should be taken as illustrating patterns of interactions between communities, rather than an exact representation on the individual entity level.

Not illustrated due to the relatively small number of entities involved is the nevertheless important relationship of community of catcher vessel ownership address and the community of operation of shore-based processors accepting relevant deliveries from those vessels, or, in the case of catcher/processors, the relationship between community of vessel ownership address and the communities where processed product is offloaded/transshipped. The different types of landings from catcher vessels and catcher/processors can and typically do confer a range of benefits to coastal Alaska communities, including tax revenues tied to those landings and demand for support services and related income and employment, among others.

Table 74 provides information on the correspondence between community of vessel ownership address and homeport community for BSAI groundfish TLAS sector catcher vessels. In those instances where community of ownership varies from community of homeport, that may be indicative of a pattern of differential distribution of vessel port activities, but previous NPFMC social impact analyses (e.g., AECOM 2010) would suggest that homeport designations are, in general, inconsistently predictive of the location of vessel activity in any given fishery. Nevertheless, the table shows marked variation in patterns of correspondence of community of ownership and community of homeport designation for the relevant catcher vessels. For example:

- TLAS catcher vessels with Kodiak ownership addresses (the only Alaska community with catcher vessel ownership addresses) have only Alaska homeport community designations. 83 percent (5 out of 6 vessels) have matching Kodiak ownership address and homeport designations, with the remaining vessel having a Sand Point homeport designation.
- TLAS catcher vessels with Oregon ownership addresses also have Oregon communities as their designated homeports. 63 percent (5 out of 8 vessels) have matching Newport ownership address and homeport designations.
- In contrast, it is relatively common for TLAS catcher vessels with Washington ownership addresses to have homeport community designations outside of Washington. As shown, 25 percent of the TLAS vessels with Washington ownership addresses have Alaska homeport

designations (13 out of 38 vessels) that include 5 different Alaska homeports and a single vessel has an Oregon homeport designation.

**Table 74. Correspondence of Community of Vessel Ownership Address and Homeport of BSAI Groundfish TLAS Sector Catcher Vessels, 2018 (most recent data year)**

| Vessel Homeport | Community of Vessel Ownership Address | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Kodiak AK | Newport OR | Portland OR | Siletz OR | Bellingham WA | Gig Harbor WA* | Seattle WA* | Hawaii |
| Anchorage AK | | | | | | | 2 | |
| Juneau AK | | | | | | | 1 | |
| Kodiak AK | **5** | | | | | | 7 | |
| Petersburg AK | | | | | | | | 1 |
| Sand Point AK | 1 | | | | | | 1 | |
| Unalaska/Dutch Harbor AK | | | | | | | 2 | |
| Astoria OR | | | 1 | | | | | |
| Newport OR | | **5** | | 1 | | | 1 | |
| Portland OR | | 1 | | | | | | |
| Bellingham WA | | | | | **2** | | | |
| Port Townsend WA | | | | | | | 1 | |
| Seattle WA* | | | | | | 1 | **37** | |

Note: **Bold red font** in a cell designates a match between vessel ownership address community and homeport community.
* denotes communities in the Seattle MSA.

Table 75 illustrates the correspondence between community of vessel ownership address and community of LLP ownership address for those same TLAS catcher vessels. As shown, there is a different pattern of correspondence than seen for ownership address and homeport. Specifically:

- TLAS catcher vessels with Kodiak ownership addresses (the only Alaska community with catcher vessel ownership addresses) have Alaska and Oregon LLP ownership addresses. 57 percent (4 out of 7 vessels) have vessel ownership and LLP ownership addresses in Kodiak. 29 percent and 14 percent of the vessels with Kodiak ownership addresses have LLPs with ownership addresses elsewhere in Alaska or in Oregon, respectively.
- TLAS catcher vessels with Oregon ownership addresses have Oregon and Washington LLP ownership addresses. 70 percent (7 out of 10 vessels) have vessel ownership and LLP ownership addresses in Oregon and in each case the two types of ownership communities match (Newport and Siletz). The remaining 30 percent of Oregon ownership address vessels have LLP ownership addresses in Washington.
- In contrast, TLAS catcher vessels with Washington ownership addresses only LLP ownership addresses in Washington as well. While vessel ownership addresses are concentrated in 3 communities, LLP ownership addresses are in 11 different communities, however, 2 of 3 (67 percent) of the vessel ownership communities are within the Seattle MSA, as are 8 of 11 (73 percent) of the LLP ownership communities.

**Table 75. Correspondence of Community of Vessel Ownership Address and Community of LLP Ownership Address of BSAI Groundfish TLAS Sector Catcher Vessels, 2018 (most recent data year)**

| Community of LLP Ownership Address | Community of Vessel Ownership Address | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Kodiak AK | Newport OR | Portland OR | Siletz OR | Bellingham WA | Gig Harbor WA* | Seattle WA* | Hawaii |
| Anchorage/Girdwood AK | 1 | | | | | | | 1 |
| Homer AK | 1 | | | | | | | |
| Kodiak AK | **4** | | | | | | | |
| Clackamas OR | 1 | | | | | | | |
| Newport OR | | **6** | | | | | | |
| Siletz OR | | | | **1** | | | | |
| Bellingham WA | | | | | **1** | | 2 | |
| Chinook WA | | | 1 | | | | | |
| Edmonds WA* | | | | | | | 3 | |
| Friday Harbor WA | | | | | 1 | | | |
| Gig Harbor WA* | | | | | | **1** | | |
| Issaquah WA* | | | | | | | 1 | |
| Lakewood WA* | | | | | | | 1 | |
| Mercer Island WA* | | | | | | | 1 | |
| Ridgefield WA | | | | | | | 1 | |
| Seattle WA* | | 1 | | 1 | | | **42** | |
| Shoreline WA* | | | | | | | 2 | |
| Woodway WA* | | | | | | | 1 | |

Note: **Bold red font** in a cell designates a match between vessel ownership address community and LLP ownership address community.

* denotes communities in the Seattle MSA.

Table 76 provides information on the correspondence between community of vessel ownership address and homeport community for BSAI groundfish Amendment 80 sector catcher/processors. As shown vessel ownership addresses are concentrated in Seattle and Maine as are homeport designations although there is more variability in the latter. Specifically:

- Among the Amendment 80 vessels with Seattle ownership addresses, 85 percent (11 out of 13 vessels) also have Seattle homeport designations, while the remaining vessels have Alaska (Dutch Harbor or Kodiak) homeport designations.
- For those vessels with Maine ownership addresses, 80 percent (4 out of 5 vessels) also have Maine homeport designations, while the remaining vessel has a Washington (Seattle) homeport designation.

**Table 76. Correspondence of Community of Vessel Ownership Address and Homeport of BSAI Groundfish Amendment 80 Sector Catcher/Processors, 2018 (most recent data year)**

| Vessel Homeport | Community of Vessel Ownership Address | |
|---|---|---|
| | Seattle WA* | Maine |
| Dutch Harbor AK | 2 | |
| Kodiak AK | 1 | |
| Seattle WA* | **11** | 1 |
| Maine | | **4** |

Note: **Bold red font** in a cell designates a match between vessel ownership address community and homeport community.
* denotes communities in the Seattle MSA.

Table 77 illustrates the correspondence between community of vessel ownership address and community of LLP ownership address for those same Amendment 80 catcher/processors. As shown, there is a one-to-one correspondence for vessel ownership address community and LLP ownership address community.

**Table 77. Correspondence of Community of Vessel Ownership Address and Community of LLP Ownership Address of BSAI Groundfish Amendment 80 Sector Catcher/Processors, 2018 (most recent data year)**

| Community of LLP Ownership Address | Community of Vessel Ownership Address | |
|---|---|---|
| | Seattle WA* | Maine |
| Seattle WA* | **14** | |
| Maine | | **5** |

Note: **Bold red font** in a cell designates a match between vessel ownership address community and LLP ownership address community.
* denotes communities in the Seattle MSA.

Table 78 provides information on the correspondence between community of vessel ownership address and homeport community for BSAI groundfish hook-and-line catcher vessels. As shown, ownership addresses are concentrated in Alaska and Washington, but there are different patterns in the correspondence between ownership address community and homeport community in the two states. Specifically:

- 100 percent of hook-and-line catcher vessels with Alaska ownership addresses (Dutch Harbor and Homer) have Alaska homeport designations. In each case, the vessel ownership address community matches the homeport community.
- In contrast, 60 percent of vessels with Washington ownership addresses (3 out of 5 vessels) have Alaska homeport designations (Dutch Harbor or Juneau), with the remaining vessels having homeport designations within the Seattle MSA.
- The single vessel with a California ownership address has an Alaska community (Adak) designated as its homeport.

**Table 78. Correspondence of Community of Vessel Ownership Address and Homeport of BSAI Groundfish Hook-and-Line Catcher Vessels, 2018 (most recent data year)**

| Vessel Homeport | Community of Vessel Ownership Address | | | | | |
|---|---|---|---|---|---|---|
| | Dutch Harbor AK | Homer AK | Deer Park WA | Gig Harbor WA* | Seattle WA* | California |
| Adak AK | | | | | | 1 |
| Dutch Harbor AK | **1** | | 1 | | 1 | |
| Homer AK | | **3** | | | | |
| Juneau AK | | | | | 1 | |
| Seattle WA* | | | | 1 | **1** | |

Note: **Bold red font** in a cell designates a match between vessel ownership address community and homeport community.
* denotes communities in the Seattle MSA.

Table 79 illustrates the correspondence between community of vessel ownership address and community of LLP ownership address for those same hook-and-line catcher vessels. As shown:

- 100 percent of hook-and-line catcher vessels with Alaska ownership addresses (Dutch Harbor and Homer) also have Alaska LLP ownership addresses. In each case, the vessel ownership address community matches the LLP ownership address community.
- 100 percent of hook-and-line catcher vessels with Washington ownership addresses also have Washington LLP ownership addresses. In each case, Seattle is the LLP ownership address community.

**Table 79. Correspondence of Community of Vessel Ownership Address and Community of LLP Ownership Address of BSAI Groundfish Hook-and-Line Catcher Vessels, 2018 (most recent data year)**

| Community of LLP Ownership Address | Community of Vessel Ownership Address | | | | | |
|---|---|---|---|---|---|---|
| | Dutch Harbor AK | Homer AK | Deer Park WA | Gig Harbor WA* | Seattle WA* | California |
| Dutch Harbor AK | **1** | | | | | |
| Homer AK | | **3** | | | | |
| Seattle WA* | | | 1 | | **2** | |

Note: **Bold red font** in a cell designates a match between vessel ownership address community and homeport community.
* denotes communities in the Seattle MSA.

Table 80 provides information on the correspondence between community of vessel ownership address and homeport community for BSAI groundfish hook-and-line sector catcher/processors. As shown, both vessel ownership addresses and homeport designations are concentrated in Washington. Specifically:

- Among vessels with Anchorage ownership addresses (the only Alaska community with hook-and-line catcher/processor ownership addresses) 1 has an Alaska homeport designation (Newtok) and one has a Washington homeport designation (Seattle).
- The single vessel with an Oregon ownership address has a Washington homeport designation (Seattle).
- Among vessels with a Washington ownership address, 70 percent (16 of 23 vessels) have a Seattle homeport designation, with the remaining 30 percent having Alaska homeport designations (Kodiak, with 4 vessels, and Petersburg, with 3 vessels).

**Table 80. Correspondence of Community of Vessel Ownership Address and Homeport of BSAI Groundfish Hook-and-Line Catcher/Processors, 2018 (most recent data year)**

| | Community of Vessel Ownership Address | | | | | | |
|---|---|---|---|---|---|---|---|
| **Vessel Homeport** | Anchorage AK | Bend OR | Bothell WA* | Everett WA* | Lynden WA | Mill Creek WA* | Seattle WA* |
| Kodiak AK | | | | | 4 | | |
| Newtok AK | 1 | | | | | | |
| Petersburg AK | | | | | | | 3 |
| Seattle WA* | 1 | 1 | 1 | 1 | | 2 | **12** |

Note: **Bold red font** in a cell designates a match between vessel ownership address community and homeport community.

* denotes communities in the Seattle MSA.

Table 81 illustrates the correspondence between community of vessel ownership address and community of LLP ownership address for those same hook-and-line sector catcher/processors. As shown:

- Hook-and-line catcher/processors with Anchorage vessel ownership addresses (the only Alaska ownership address community) have only Anchorage LLP ownership addresses as well.
- The single vessel with an Oregon ownership address has a Washington LLP ownership address (Montesano).
- Among vessels with a Washington ownership address, 83 percent (20 of 24 vessels) have a Washington LLP ownership address (and of those, 80 percent [16 of 20] are within the Seattle MSA). Of the remaining 4 vessels, 3 have an Alaska LLP ownership address (Petersburg), while one has an LLP ownership address in Texas.

**Table 81. Correspondence of Community of Vessel Ownership Address and Community of LLP Ownership Address BSAI Groundfish Hook-and-Line Catcher/Processors, 2018 (most recent data year)**

| Community of LLP Ownership Address | Community of Vessel Ownership Address | | | | | | |
|---|---|---|---|---|---|---|---|
| | Anchorage AK | Bend OR | Bothell WA* | Everett WA* | Lynden WA | Mill Creek WA* | Seattle WA* |
| Anchorage AK | **2** | | | | | | |
| Petersburg AK | | | | | | | 3 |
| Centralia WA | | | | | | 1 | |
| Everett WA* | | | | **1** | | | |
| Lynden WA | | | | | **3** | | |
| Mill Creek WA* | | | | | | **1** | |
| Montesano WA | | 1 | | | | | |
| Seattle WA* | | | | | 1 | 1 | **12** |
| Texas | | | 1 | | | | |

Note: **Bold red font** in a cell designates a match between vessel ownership address community and LLP ownership address community.
* denotes communities in the Seattle MSA.

Table 82 provides information on the correspondence between community of ownership address for BSAI groundfish TLAS sector catcher vessels and crew employed on those vessels for 2017, based on EDR data. ***As noted in Section 4.5.2,4.5.2 there substantial caveats that must accompany the use of these data. All of the caveats outlined in that section apply specifically to the data in this table as well***. As shown in summary in that table:

- Among crew from Alaska communities, 60 percent work on vessels with Kodiak ownership addresses and 40 percent work on vessels with Washington ownership addresses.
- Among crew from Oregon, 12 percent work on Alaska ownership vessels, 28 percent work on Oregon ownership address vessels, and 60 percent work on Washington ownership address vessels.
- Among crew from Washington, 15 percent work on Alaska ownership vessels and 85 percent work on Washington ownership address vessels.
- Among crew from US territories and states other than Alaska, Oregon, and Washington, 24 percent work on Alaska ownership vessels and 76 percent work on Washington ownership address vessels.

Table 89 (in Attachment B [Section 10.2]) provides similar information for TLAS vessels, but in a different format and with more individual community detail for the states outside of Alaska.

Table 90 and Table 91 (both in Attachment C [Section 10.3]) provide information on employment levels onboard BSAI groundfish Amendment 80 sector catcher/processors and community of residence for crew members of those vessels, respectively, based on 2017 EDR data. Table 92 (in Attachment D [Section 10.4]) provides some BSAI groundfish Amendment 80 sector catcher/processor crew demographic information as supplied directly by industry for an earlier Council analysis.

**Table 82. Correspondence of Community of Vessel Ownership Address and Community of Crew Residence of BSAI Groundfish TLAS Sector Catcher Vessels that Completed a Gulf of Alaska Trawl Fishery Economic Data Report Form, 2017 (most recent data year)**

| Community of Crew Residence | Number of Crew Positions (CFEC Gear Operator Permit and ADFG Crew License Holders Combined) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Community of Vessel Ownership Address | | | | | | | |
| | Kodiak AK | Newport OR | Siletz OR | Bellingham WA | Camas WA | Seattle WA | South Bend WA | Total |
| Anchor Point | 2 | | | | | 1 | | 3 |
| Anchorage | 1 | | | | | | | 1 |
| Chiniak | 1 | | | | | | | 1 |
| Dutch Harbor | | | | | | 1 | | 1 |
| Kodiak | 24 | | | 2 | 3 | 8 | | 37 |
| Palmer | 1 | | | | 1 | 1 | | 3 |
| Petersburg | | | | | | 1 | | 1 |
| Wasilla | | | | | 1 | | | 1 |
| **ALASKA SUBTOTAL** | **29** | **0** | **0** | **2** | **5** | **12** | **0** | **48** |
| Lincoln County Oregon | 2 | | 5 | | | 10 | 2 | 19 |
| All Other Oregon | 1 | | 2 | | | 3 | | 6 |
| **OREGON SUBTOTAL** | **3** | **0** | **7** | **0** | **0** | **13** | **2** | **25** |
| Seattle MSA Washington | 4 | | | 1 | | 23 | 1 | 29 |
| All Other Washington | 2 | | | | | 9 | 1 | 12 |
| **WASHINGTON SUBTOTAL** | **6** | **0** | **0** | **1** | **0** | **32** | **2** | **41** |
| American Samoa | | | | | | 1 | | 1 |
| Arizona | 1 | | | | | 1 | | 2 |
| California | | | | | | 3 | | 3 |
| Colorado | 1 | | | | | 1 | | 2 |
| Florida | | | | | | 1 | | 1 |
| Hawaii | | | | | | 1 | | 1 |
| Illinois | 1 | | | | | | | 1 |
| Massachusetts | | | | 1 | | | | 1 |
| Montana | | | | | | 2 | | 2 |
| New Mexico | | | | | | 1 | | 1 |
| New York | | | | | | 1 | | 1 |
| Ohio | 1 | | | | | | | 1 |
| **OTHER STATES SUBTOTAL** | **4** | **0** | **0** | **1** | **0** | **12** | **0** | **17** |
| **Unknown/Unassigned** | **9** | | **1** | **2** | | **4** | | **16** |
| **GRAND TOTAL** | **51** | **0** | **8** | **6** | **5** | **73** | **4** | **147** |

Source: GOA Trawl Catcher Vessel EDR data.

# 7 Regional and Community-Level Social Impacts by Alternative

## 7.1 Community Engagement, Dependence, Vulnerability, Resilience, and Risks to Fishing Community Sustained Participation in the Relevant BSAI Groundfish Fisheries

Community engagement (participation) in the relevant BSAI groundfish fisheries was detailed in terms of the distribution of sectors across communities in Section 5 and by sectors within the context of regions and communities in Section 6. Vulnerability of communities to adverse community-level impacts from the proposed action alternatives is in part a function of dependence of the community on the potentially affected BSAI groundfish fisheries and the economic resiliency and diversity of the community. Dependency is influenced by the relative importance of the relevant BSAI groundfish fisheries to vessels participating directly in the fisheries in comparison to all area, species, and gear fisheries in which those same vessels participate (community sector vessel diversity); the relative importance of the relevant BSAI groundfish fisheries to all community resident-owned commercial fishing vessels participating in all area, species, and gear fisheries combined (community fleet diversity); the relative importance of the relevant BSAI groundfish processing to all locally operating processors participating in all area, species, and gear fisheries combined (community processor diversity); and the relative importance of the overall community fishery sector(s) within the larger community economic base both in terms of private sector business activity and public revenues (community economic diversity). Also important to adverse community-level impact outcomes and community resilience is the specific nature of local engagement in the potentially affected BSAI groundfish fishery sectors and alternative employment, income, business, and public revenue opportunities available within the community as a result of the location, scale, and relative economic diversity of the community. At their most extreme, potential adverse impacts associated with a proposed action could present a risk to fishing community sustained participation in the BSAI groundfish fisheries.

### 7.1.1 BSAI Groundfish Fishery Dependency and Vulnerability to Community-Level Impacts of the Proposed Action Alternatives among Alaska Communities

The relative importance of the BSAI groundfish fisheries likely to be affected by the proposed alternatives within the larger local fisheries sector and within the larger local economic base varies widely among the engaged Alaska communities. Similarly, the socioeconomic structure of the engaged communities varies widely along with the relative diversity of their respective local economies.

#### 7.1.1.1 BSAI Communities

**Unalaska and Akutan**

Unalaska and Akutan direct engagement in the relevant BSAI groundfish fisheries in 2010-2018 via the catcher vessel sector(s) was limited to hook-and-line catcher vessels with Unalaska ownership addresses and via the shore-based processing sector to large, multi-species, multi-fishery BSAI groundfish shore-based processors operating in both communities. Unalaska and Akutan also derive substantial public revenues from BSAI groundfish landings by catcher vessels and related economic activities. Unalaska, unique among Alaska communities, also derives substantial public revenues from BSAI groundfish catcher/processors delivering/transferring processed product in the port for subsequent shipping and

related economic activities. Unalaska also benefits from a relatively well-developed support service sector that supports myriad BSAI groundfish fishery-related activities across all sectors.

Among Alaska communities, Unalaska was the second most heavily engaged community in the BSAI hook-and-line catcher vessel sector in terms of local ownership address vessels, with only Homer having more participating vessels (Table 15). However, at 25 percent of all ex-vessel revenues of these vessels accruing from BSAI groundfish hook-and-line catch (Table 17), and 6.2 percent of all "community fleet" revenues accruing from this fishery (Table 18), Unalaska has a higher local catcher vessel economic dependency on this fishery sector than any other Alaska community.

Unalaska, while the largest fishing port in the nation in terms of volume and second largest in terms of value of commercial fishery landings, has a small resident-owned commercial fishing fleet, both in terms of numbers of vessels and the size of those vessels. It is also not a CDQ community, despite having a greater number of Alaska Native residents than any of the APICDA member communities.[95] As a result, the local fleet does not have direct access to CDQ quota to use as a stable underpinning of the fleet or a hedge against their vulnerability to potential adverse impacts of proposed management alternatives in either the Pacific cod or halibut fisheries, two of the primary fisheries of the local commercial fleet.

In terms of potential impacts to locally operating shore-based processors, processors in both communities accepted deliveries of relevant deliveries of BSAI groundfish every year 2010-2018 (Table 23). For shore-based processors accepting relevant BSAI groundfish deliveries in Unalaska and Akutan combined, the ex-vessel value of these landings accounted for 82.8 percent of the ex-vessel value of relevant BSAI groundfish landings at all shore-based processors in Alaska combined (Table 24). These landings accounted for 7.9 percent of the ex-vessel value of all landings from all area, species, and gear type fisheries delivered to these same plants (Table 25) and 6.8 percent of all ex-vessel value of landings at all processors operating in these two communities, not just the processors that accepted the relevant BSAI groundfish landings (Table 26).

In terms of support services, Unalaska, with its relatively well-developed fishery support service sector and its role as the major shipping port of the BSAI area, could experience indirect impacts from the proposed alternatives through a decline in economic activity related to the TLAS and/or hook-and-line catcher vessel fleets and/or Amendment 80 and/or hook-and-line catcher/processor fleets if port calls were to decline as a result of the proposed action; however, there is no straightforward way to quantitatively estimate these impacts. It is important to note that Unalaska, unlike other ports in the region, has seen the development of a considerable amount of business activity related to the BSAI groundfish catcher/processor fleets, including investment in the local support infrastructure (AECOM 2010). Akutan, with relatively few locally available support services, is not anticipated to be vulnerable to these types of impacts.

***Potential Environmental Justice Concerns***

In terms of the potential for high and adverse impacts accruing disproportionately to minority populations or low-income populations (which would trigger environmental justice concerns under EO 12898), direct adverse impacts to Unalaska and/or Akutan as a result of the proposed alternatives, if any, would be focused on the shore-based processing sector. While the Unalaska local fleet is typically represented by the Unalaska Native Fishermen's Association, which according to tribal leadership has a close working relationship with the Qawalangin Tribe of Unalaska, membership is not limited to those residents of Alaska Native descent, and the demographics of the specific vessel owners and crew of the BSAI

[95] As noted in Section 6.1.1, in 2010, Unalaska's Aleut population was larger than the Aleut populations of the potentially BSAI halibut dependent APICDA member communities (Akutan, Atka, and St. George) combined, and it was only about seven percent smaller than the Aleut populations of all APICDA member communities combined.

groundfish hook-and-line vessels that would potentially be most directly affected by the proposed alternatives is unknown.

In both Unalaska and Akutan, however, processing workers have tended to be relatively distinct demographically in relation to the rest of the local population; processing workers in both communities are overwhelmingly recruited from a labor pool from outside the community, have lived in group quarters supplied on-site by the locally operating processing companies, and have tended to include a high proportion of non-White (and non-Alaska Native) minority workers. Due to the almost exclusive use of group quarters by processing workers in each community (other than some management personnel), it is possible to estimate the minority component of this workforce population. As of 2010, based on a combination of race and ethnicity, 78.1 percent of Unalaska's group quarters population consisted of minority residents and 91.4 percent of Akutan's group quarters population consisted of minority residents. As of 2017, 6.2 percent of Unalaska's residents and 19.0 percent of Akutan's residents were considered low-income, compared to 10.2 percent of Alaska's general population (Table 44 and Section 4.4).

Impacts to processing workers could occur as the result of implementation of one or more of the proposed alternatives in the form of reduced income or employment opportunities, depending on how specific plants and, importantly, their delivering fleets, adapt to changing conditions. While the dependency of these plants on the relevant BSAI groundfish deliveries is not high, it is not insignificant and an absolute level of economic dependency as measured by ex-vessel value of landings does not capture the importance a particular fishery may have in the overall annual cycle of the plant (e.g., these landings may occur during otherwise slow times when processing work availability may be down) or the labor hour effort that may be needed, as how labor-intensive processing a particular species or a given product form produced from that species may be varies widely. It is not likely, however, that any of the proposed alternatives would result in any high and adverse impacts to processing workers in the form of substantial processor workforce reductions, given the relatively modest level of dependency of the shore-based processing plants in these communities on relevant BSAI groundfish deliveries compared to those from other sectors within the BSAI groundfish fishery and to those in other fisheries in which these plants are engaged (although a reduction in processing worker earnings through the loss of labor hours, including overtime hours, may occur). As a result, it is not expected that environmental justice would be an issue of major concern for these communities.

## Adak and Atka

Adak and Atka direct engagement in the relevant BSAI groundfish fisheries in 2010-2018 was limited a single shore-based processor operating in each community that accepted relevant BSAI groundfish deliveries. In both communities, these deliveries took place in seven out of the nine years covered by the data (Table 23). However, the degree of processor reliance on these deliveries varied widely.

While all revenue data associated with these processors are confidential, however, as discussed in Section 6.1.7.2, in the case of Atka, the recent Amendment 113 analysis (December 2018) indicated that Aleutian Islands Pacific cod deliveries to the Atka plant were limited to incidental catch from a different target fishery as the plant otherwise focused exclusively on halibut and sablefish. Further, noted in Section 6.1.5, the Atka plant did not operate in 2018 and its future is uncertain. As a result, it is not likely that any of the proposed alternatives would directly and adversely affect the community of Atka. However, it is known that in the past, adding Pacific cod processing capacity has been considered to diversity plant and local fleet operations. Whether this would be a likely scenario were the plant to re-open in the foreseeable future is unknown, as is the potential impact of the proposed alternatives with respect to either facilitating or impeding that potential future form of fishery engagement as well.

The shore-based processing plant in Adak, in contrast, has historically been substantially dependent on Pacific cod deliveries (NOAA 2014). According to an interview with an individual with ownership interest in the local shore-based processor in 2008, "…the A season cod is the main source of income for

the plant (and raw fish tax revenue for the City of Adak), probably accounting for about 75 percent of annual plant revenue." In 2007, the plant reported having 30 cod vessels make a total of 144 deliveries which, according to this same individual with plant ownership interest, "overwhelms anything else that happens during the rest of the year, not just in terms of volume at the plant, but in terms of crew utilizing local businesses (the fuel dock, the store, the bar): without A season cod, the plant does not survive" (AECOM/EDAW and Northern Economics 2008). While specific volume and value data are confidential, the plant did make Pacific cod delivery figures for 2002-2008 public in previous documents through a waiver of confidentiality (NOAA 2014), which also indicate a heavy dependence on Pacific cod. While the Adak plant has been through many changes since 2008, it is generally understood that dependence on Pacific cod has remained very high.

Adak has also been the continuing focus of a concerted effort to grow the fishery (and shipping) support service sector of the local economy, and BSAI groundfish vessel port calls constitute an important economic driver for this sector (NOAA 2014). Given this important, but largely unquantified, continuing level of dependency on BSAI Pacific cod, and the historic fragility/inconsistency of local shore-based processing operations that has proven a challenge in developing a largely fisheries-based sustainable local economy in the relatively newly reconstituted civilian community, Adak is particularly vulnerable to adverse impacts related to the proposed action alternatives that would result in the greatest potential reductions of BSAI halibut PSC limits under low abundance conditions. The level of adverse impact would depend on the nature and success of behavioral adaptions of BSAI groundfish vessels in response to the ultimately implemented proposed alternative. Specifically, the vulnerability of Adak to adverse impacts related to alternatives affecting the BSAI groundfish TLAS and/or hook-and-line vessel sectors (and thus shore-based processing), may be minimized by differences in halibut bycatch rates between the Aleutian Islands and Bering Sea subareas. With historically lower halibut bycatch rates in the Pacific cod fishery in the Aleutian Islands subarea, if BSAI halibut PSC limits decrease, BSAI groundfish TLAS vessels especially may have an incentive to concentrate more heavily on the Aleutian Islands subarea, which may benefit the community of Adak. On the other hand, the Pacific cod fishery in the Aleutian Islands subarea typically peaks later in the season than does the Pacific cod fishery in the Bering Sea subarea. Absent specific protections that would essentially set aside a separate Aleutian Islands halibut PSC limit, if a reduced BSAI halibut PSC limit is hit during the earlier Pacific cod effort in the Bering Sea subarea and shuts down the later Pacific cod fishery effort in the Aleutian Islands subarea, Adak would experience adverse impacts.

Adak shore-based processing has faced, from the local perspective, a number of fishery management related challenges over the years, including BSAI crab rationalization (AECOM 2010) and Steller sea lion protection measure restrictions (NOAA 2014). This is compounded by the basic challenges of operating in a community that is logistically remote even by Alaska standards and in a local economy that remains challenged by the transition from relatively large military community to a small civilian community.[96] In

[96] There have been a number of federal actions designed to facilitate this transition and foster the growth of a fisheries-based local economy in Adak, including actions that occurred as a part of the Base Realignment and Closure process (that was accompanied by considerable Aleut Corporation investment in the community), an Aleutian Islands pollock directed fishery allocation to the Aleut Corporation for the purposes of economic development in Adak, community quota entity-enabled purchases of IFQ by the Adak Community Development Corporation for the purposes of building and sustaining local fishery engagement, and multiple community protection measure elements of the BSAI crab rationalization program that were either designed or have served to foster or protect sustained participation in local commercial fisheries by the community of Adak. The BSAI crab rationalization program features particularly relevant to Adak included a direct allocation of Western Aleutian Island golden king crab to the community of Adak, a western share landing/processing regional designation that essentially functioned as community protection feature for Adak, and processor quota shares that were initially linked to the community of Adak through community protection restrictions on transfers. More recently, these actions were supplemented by the creation of a separate state waters guideline harvest level Pacific cod fishery to provide long-term economic opportunities for Adak. To date, for a combination of reasons, these actions have made relatively modest contributions to the development of a local fishing economy in Adak (NOAA 2014). To the extent that these efforts at successfully building a local fisheries-based

terms of support services, Adak has seen relatively modest development of the fishery support service sector outside of marine fuel supply. However, within its equally modest local economy, marine fuel sales and other support service activity associated with commercial fishing catcher vessel and catcher/processor port calls that do occur are important to the community (NOAA 2014). Adak could experience indirect impacts of under some of the proposed alternatives through a decline in support service activity related to the various catcher vessel and/or catcher/processor fleets if port calls were to decline as a result of the implementation of those alternatives, but there is no straightforward way to quantitatively estimate these impacts. Potential impacts from those alternatives could be a part of larger cumulative impacts on local fisheries and support sectors, especially if reduced BSAI halibut PSC limits functioned to cause early closures of Pacific cod fishery effort in the Aleutian Islands subarea. Whether adverse impacts related to any specific alternative would represent a significant threshold or tipping point for larger impacts of a cumulative nature remains unknown at this time. If such a threshold or tipping point were reached for Adak, this would represent a potential risk to the community's sustained participation in the BSAI groundfish fisheries foreseeable under any of the proposed alternatives.

***Potential Environmental Justice Concerns***

As of 2010, 95.1 percent of Atka's population was considered minority, which is the same proportion of Alaska Native residents in the community's population. As of 2017, 7.8 percent of Atka's residents were considered low-income, which is below the proportion of low-income residents in Alaska's general population. Given the nature of potential impacts to the community of Atka, summarized above, no disproportionate high and adverse impacts to either minority or low-income populations in Atka are anticipated.

Direct adverse impacts to Adak as a result of the proposed action alternatives, if any, would be focused on the shore-based processing sector. As in Unalaska and Akutan, processing workers in Adak have tended to be relatively distinct demographically in relation to the rest of the local population; processing workers have been overwhelmingly recruited from a labor pool from outside the community, have lived in group quarters supplied on-site by the locally operating processing companies, and have tended to include a high proportion of non-White (and non-Alaska Native) minority workers. Due to the almost exclusive use of group quarters by processing workers in Adak (other than some management personnel), it is possible to estimate the minority component of this workforce population. As of 2010, based on a combination of race and ethnicity, 95.9 percent of Adak's group quarters population consisted of minority residents. As of 2017, 40.0 percent of Adak's residents were considered low-income, compared to 10.2 percent of Alaska's general population (Table 44 and Section 4.4). To the extent that the proposed action alternatives would adversely impact local processing operations and result in a loss of employment and income opportunities, environmental justice would potentially be an issue of concern for the community of Adak.

## Nome

Nome's direct engagement in the relevant BSAI groundfish fisheries in 2010-2018 was limited a single shore-based processor operating in the community that accepted relevant BSAI groundfish deliveries each of the nine years during this period (Table 23). However, as discussed in Section 6.4.4, these deliveries included tomcod, which was used for bait, as well as Pacific cod. Engagement in the Pacific cod fishery in Nome, according to NSEDC management staff, is still in its infancy. The potential impact of the proposed alternatives with respect to either facilitating or impeding the growth of Pacific cod fishery engagement in Nome is unknown.

economy would be made more difficult by the proposed action alternatives, Adak would experience additional cumulative impacts.

## Other CDQ Communities

CDQ entities and their constituent communities could be impacted by potential changes to the BSAI groundfish fisheries related to the proposed action alternatives in multiple ways, two of the most direct of which are (1) through their quota holdings in the potentially affected BSAI groundfish fisheries and (2) through CDQ group investments in direct participation in the potentially affected industrial scale groundfish fisheries, including catcher vessel, catcher/processor, and shore-based processor ownership interests. These potential effects are discussed by CDQ region, if and as relevant, in Section 7.2.

It is also important to note that efforts directed toward exploration or development of a greater degree of direct engagement in the BSAI Pacific cod fishery through local small vessel fleets is underway in some CDQ communities, including Nome, Savoonga, and St. Paul, and has previously been contemplated in False Pass and Atka. It is also likely that the BSAI groundfish shore-based processing will likely occur in False Pass in the future, given recent increases to shore-based processing capacity in the community. These trends are also discussed in Section 7.2, although at present the potential impact of the proposed action alternatives on these efforts, if any, are unclear.

### 7.1.1.2 GOA Communities

## Anchorage and Kodiak

Anchorage and Kodiak are the two Alaska communities outside of the BSAI region that were engaged in the BSAI groundfish fisheries most directly potentially affected by one or more of the proposed action alternatives through more than one sector during the period 2010-2018 (Table 1). Anchorage is shown in the dataset used for this analysis as the community of ownership address for BSAI groundfish hook-and-line catcher/processors and the location of shore-based processors that accepted relevant deliveries of BSAI groundfish during this time. Kodiak is shown in the data as the community of ownership address for BSAI groundfish TLAS catcher vessels and BSAI groundfish hook-and-line catcher vessels, and the location of shore-based processors that accepted relevant deliveries of BSAI groundfish during this time.

For Anchorage, the relatively modest level of engagement in the BSAI groundfish fishery combined with the size of the community (approximately 291,000 residents in 2010) and the size and relative diversity of the local economy makes adverse community-level impacts from the proposed action alternatives unlikely. As noted in Section 4.3.1, Anchorage appears in the dataset as having an annual average of 2.4 BSAI groundfish hook-and-line catcher/processors with local ownership addresses for the period 2010-2018 (a total of five unique vessels, of which between two and four participated in any one year, with two participating in the most recent four years covered by the data) (Table 19). As noted in that same section, Anchorage was also the reported location of operation of an annual average of 1.6 shore-based processors that accepted landings of BSAI TLAS and/or hook-and-line caught groundfish and/or CDQ groundfish each year during this same period (a total of three unique processors, of which between one and three participated in any one year, with one participating in the most recent four years covered by the data) (Table 23). All first wholesale gross revenue data associated with Anchorage's engagement in these sectors are confidential. Further, a general knowledge of the industry, a review of the available data, and past Council analyses (e.g. AECOM 2010) would suggest that at least some of the activity attributed to Anchorage is the result of inaccurate assignment of operating locations of processing plants (where an office address is given as the location of operation rather than actual community of operation) and, in the case of catcher/processors, at least some of the ownership attributed to Anchorage is likely due to some CDQ entities basing their offices and fishery business support operations in Anchorage rather than in the CDQ regions themselves.

For Kodiak, the relatively modest level of engagement in the BSAI groundfish fishery combined with the size of the community (approximately 6,100 residents in 2010), size and relative diversity of the local economy in general, and the fishery-based component of the local economy in particular, makes adverse community-level impacts from any of the proposed action alternatives unlikely. As noted in Section 4.3.1,

Kodiak appears in the 2010-2018 dataset as having annual average of 4.3 BSAI groundfish TLAS catcher vessels with local ownership addresses over this period (a total of 10 unique vessels, of which between one and seven participated in any one year) (Table 6). While the data for two years are confidential (2010 and 2014), BSAI groundfish ex-vessel gross revenues for these vessels accounted for an annual average of about 7.4 percent of total ex-vessel gross revenues for these vessels for the period (Table 8); these ex-vessel gross revenues accounted for 0.46 percent of the average annual total ex-vessel gross revenues for all catcher vessels (for all areas, gears, and fisheries) with Kodiak ownership addresses over this same time period (Table 9), such that the community catcher vessel fleet as a whole has negligible dependence on the BSAI groundfish TLAS fishery. It is important to note, however, that impacts to Kodiak ownership address BSAI groundfish TLAS vessels in particular could be substantial at the operational level, depending on the specific proposed action alternative selected for implementation.

While five Kodiak ownership address BSAI groundfish hook-and-line catcher vessels participated in the BSAI groundfish fishery in 2010, and one did so in 2012 and 2013, none did so in the five most recent years covered by the dataset (Table 15). An annual average of 0.7 Kodiak shore-based processors accepted relevant BSAI groundfish deliveries over the period 2010-2018 (three in 2016 and one each in 2012, 2014, and 2017) A total of three unique processors participating over this period, but none participated in five of the nine years covered by the data (Table 23). While all revenue data for the Kodiak ownership address BSAI groundfish hook-and-line catcher vessels and the BSAI groundfish shore-based processors operating in Kodiak are confidential, given the intermittent nature of engagement in these two sectors and a general knowledge of the local fishing industry, it is assumed that the revenue contribution to local commercial fishing fleet and the local shore-based processing sector is minimal.

Finally, it should be noted that Kodiak is distinguished from most other Alaskan fishing ports (with one notable exception being Unalaska) by the number and range of support service businesses that cater in whole or in part to the commercial fishing industry, including vessels from outside the community. Support services include a wide range of companies, including companies that provide direct services to processing plants and harvesting vessels, such as hydraulic and welding firms, as well as indirect service providers that still depend to a degree on fisheries-related activities, such as accounting and bookkeeping services and vehicle rental enterprises. In addition, there are also several educational and governmental entities that operate fisheries-related research facilities in Kodiak (AECOM 2010). While it is possible that some of these businesses and institutions could be adversely affected by implementation of one or more of the proposed action alternatives, this type of potential impact cannot be quantified with existing information.

***Potential Environmental Justice Concerns***

Direct adverse impacts to Kodiak as a result of the implementation of one or more of the proposed action alternatives, if any, would be focused on the BSAI groundfish TLAS catcher vessel sector. Although systematically collected demographic and income information on individual fishery participants by sector is not readily available, previous work (AECOM 2010, 2013) and a working familiarity with this sector does allow for at least some general characterizations for minority population engagement. Historically, Kodiak commercial fishing vessel owners and crew have tended to mirror the general population of the community (or, if anything, be demographically less diverse in non-Alaska Native minority representation than the general population). It is assumed that environmental justice would not be an issue of potential concern for the community.

## King Cove and Sand Point

King Cove and Sand Point are two Alaska communities outside of the BSAI region that were engaged in the BSAI groundfish fisheries most directly potentially affected by one or more of the proposed action alternatives exclusively through the BSAI groundfish shore-based processing sector during the period 2010-2018 (Table 1). King Cove and Sand Point have relatively small populations (938 and 976 residents, respectively, in 2010) and the overall economy of each is tied closely to commercial fishing. Both have

relatively large residential commercial fishing fleets and are the operating location of a single, relatively large multi-species shore-based processing plant that participates in both BSAI and GOA fisheries.

As noted in Section 4.3.1, King Cove appears in the 2010-2018 dataset as being the location of one shore-based processor that accepted landings of BSAI TLAS and/or hook-and-line caught groundfish each year during this period (Table 23). All revenue data associated with King Cove's engagement in this sector are confidential. Given a general knowledge of King Cove shore-based processing operations however, it is assumed that the King Cove shore-based processor has little dependency on relevant BSAI groundfish TLAS or hook-and-line and/or CDQ landings relative to landings of all area, gear, and species fisheries combined. Given this assumption, adverse community level impacts resulting from the implementation any one of the proposed action alternatives is considered unlikely, but ultimately the nature and level of any impacts would be determined by the how the locally operating plant and, importantly, its delivering fleet, adapt to changing conditions.

As noted in Section 4.3.1, Sand Point appears in the 2010-2018 dataset as being the location of one BSAI groundfish shore-based processor actively participating in the relevant BSAI groundfish fisheries in five of the nine years covered by the data (2010-2011, 2013, 2015, and 2018) (Table 23). All revenue data associated with Sand Point's engagement in this sector are confidential. However, given a general knowledge of Sand Point shore-based processing operations, including its primary focus on GOA fisheries, and common BSAI groundfish catcher vessel delivery patterns, it is assumed that the Sand Point shore-based processor has little dependency on BSAI TLAS groundfish landings, BSAI hook-and-line Pacific cod landings, and/or CDQ landings relative to landings the plant accepts from all area, gear, and species fisheries combined. With a lack of recent participation of Sand Point ownership address catcher vessels in the BSAI groundfish TLAS, hook-and-line, or CDQ fisheries in combination with the intermittent nature of participation of the shore-based processing sector in accepting landings from these sectors in recent years, and the assumed limited dependency of the local shore-based processor on those landings in particular, adverse community level impacts to Sand Point resulting from the implementation any one of the proposed action alternatives is considered unlikely.

***Potential Environmental Justice Concerns***

Direct adverse impacts to King Cove and/or Sand Point as a result of the proposed action alternatives, if any, would be focused on the shore-based processing sector. As in Unalaska, Akutan, and Adak, processing workers in both King Cove and Sand Point have tended to be relatively distinct demographically in relation to the rest of the local population; have been overwhelmingly recruited from a labor pool from outside the community; have lived in group quarters supplied on-site by the locally operating processing companies; and have tended to include a high proportion of non-White (and non-Alaska Native) minority workers. Due to the almost exclusive use of group quarters by processing workers in both King Cove and Sand Point (other than some management personnel), it is possible to estimate the minority component of this workforce population. As of 2010, based on a combination of race and ethnicity, 94.5 percent of King Cove's group quarters population and 96.9 percent of Sand Point's group quarters population consisted of minority residents (AECOM 2013). To the extent that the ultimately adopted proposed action alternative would highly and adversely impact King Cove and/or Sand Point processing operations and result in a loss of income and employment opportunities (which is considered unlikely, given a combination of known and assumed processor dependency patterns), environmental justice would potentially be an issue of concern for the community or communities.

## Homer, Sitka, and Petersburg

Homer, Sitka, and Petersburg are three Alaska communities outside of the BSAI region that were engaged in the BSAI groundfish fisheries most directly potentially affected by one or more of the proposed action alternatives exclusively through having catcher vessels (Homer and Sitka) or catcher/processors (Petersburg) with local ownership addresses active in a relevant sector of the fishery during the period 2010-2018 (Table 1).

As noted in Section 4.3.1, Homer appears in the dataset as having an annual average of 5.3 BSAI groundfish hook-and-line catcher vessels with local ownership addresses for the period 2010-2018 (a total of 15 unique vessels, of which between three and eight participated in any one year) (Table 15). That was more than any other community in any state, and more than twice as many as any other community except for the Seattle MSA and these vessels accounted for roughly half of all the ex-vessel gross revenues for BSAI groundfish hook-and-line vessels with Alaska ownership addresses during this time period (Table 16). BSAI groundfish hook-and-line ex-vessel gross revenues accounted for approximately 21 percent of all ex-vessel gross revenues (for all area, gear, and species fisheries) for these Homer ownership address vessels (Table 17). However, they account for only 0.67 percent of the total ex-vessel gross revenues for all commercial fishing vessels with Homer ownership addresses participating in all area, gear, and species fisheries (i.e., the Homer "community fleet") (Table 18).

For Homer, the relatively modest level of engagement in the BSAI groundfish fishery combined with the size of the community (approximately 5,000 residents in 2010), size and relative diversity of the local economy in general, and the fishery-based component of the local economy in particular, makes adverse community-level impacts from any of the proposed action alternatives unlikely. It is important to note, however, that impacts to Homer ownership address BSAI groundfish hook-and-line vessels in particular could be substantial at the operational level, depending on the specific proposed action alternative selected for implementation.

As noted in Section 4.3.1, Sitka appears in the 2010-2018 dataset as having annual average of approximately 1.2 BSAI groundfish hook-and-line catcher vessels with local ownership addresses over this period (a total of seven unique vessels, of which between one and five participated in any one year 2010-2013), but none were active in the fishery in the most recent four years covered by the data (2015-2018) (Table 15). About two percent of total ex-vessel gross revenues for the participating Sitka ownership address vessels were attributable to this fishery (Table 17). Ex-vessel gross revenue from the BSAI groundfish hook-and-line fishery accounted for 0.13 percent of the total ex-vessel gross revenues for all commercial fishing vessels with Sitka ownership addresses participating in all area, gear, and species fisheries (i.e., the Sitka "community fleet") (Table 18). Given the limited dependency of the overall Sitka catcher vessel fleet on the relevant BSAI groundfish fisheries, and the relative size and economic diversity of the City and Borough of Sitka in general (population approximately 8,900 in 2010) and its commercial fisheries in particular, it is unlikely that Sitka would experience adverse community-level impacts under any of the proposed action alternatives.

As noted in Section 4.3.1, Petersburg appears in the 2010-2018 dataset as having an annual average of 4.5 hook-and-line catcher/processors with local ownership addresses engaged in BSAI groundfish fishery over this period. However, while four or five of these vessels were active each year 2010-2015, and a total of six unique vessels participated in the fishery during those years, no vessels with Petersburg ownership addresses participated in the fishery in the three most recent years covered by the data (2016-2018) (Table 15). Petersburg also appears in the data as having one BSAI groundfish TLAS catcher vessel with a community ownership address active in the fishery in 2010, but there is no similar activity in the most recent eight years covered by the dataset (Table 6). All revenues associated with these vessels are confidential. Given the lack of participation in relevant BSAI groundfish fisheries sectors in recent years, and the relative size and economic diversity of Petersburg in general (population approximately 2,950 in 2010) and its commercial fisheries in particular, it is unlikely that Petersburg would experience adverse community-level impacts under any of the proposed action alternatives.

***Potential Environmental Justice Concerns***

Given the likelihood that adverse community level impacts are not anticipated for Homer, Sitka, or Petersburg, and sector level adverse impacts are unlikely in any of the these three communities, with the possible exception of the BSAI groundfish hook-and-line catcher vessel sector in Homer, depending on the alternative selected for implementation., it is unlikely that environmental justice issues would be of concern

in any of these communities for any of the proposed alternatives. It should be noted, however, that the demographics of participants in the Homer BSAI groundfish hook-and-line catcher vessel sector are unknown and may need to be evaluated depending on the proposed action alternative selected.

#### 7.1.1.3 Minimally Engaged Alaska Communities

Beyond communities already listed in this section, no other Alaska communities are shown in the dataset used for this analysis as consistently engaged in or dependent on the BSAI groundfish fishery sectors that may be directly affected by the proposed action alternatives, outside of participation in the CDQ program, which is considered separately in Section 7.2 below. There are, however, a number of other Alaska communities have had at limited direct involvement in the relevant BSAI groundfish sectors during the period 2010-2018. These communities and the specific sectors in which they participated are summarized in Table 83. As a result of low BSAI groundfish fishery engagement and dependency levels, no substantial adverse impacts would be anticipated for any of these communities under any of the proposed action alternatives.

**Table 83. Alaska Communities with Limited Direct Engagement in Relevant BSAI Groundfish Sectors, by Sector and Years Active, 2010-2018**

| Alaska Community | Geographic/ FMP Region Location | CDQ Group (BSAI Only) | Community of Vessel Ownership Address | | | | Locally Operating SBPR Participation Years |
|---|---|---|---|---|---|---|---|
| | | | H&L CV Participation Years* | H&L CV Annual Avg. / No. of Unique Vessels | H&L CP Participation Years | H&L CP Annual Avg. / No. of Unique Vessels | |
| False Pass | BSAI | APICDA | | | | | 2015 |
| Twin Hills | BSAI | BBEDC | | | | | 2017 |
| St. Paul | BSAI | CBSFA | | | | | 2010 |
| Chefornak | BSAI | CVRF | | | | | 2013 |
| Kipnuk | BSAI | CVRF | | | | | 2013 |
| Mekoryuk | BSAI | CVRF | 2013 | 0.1 / 1 | | | 2013 |
| Toksook Bay | BSAI | CVRF | | | | | 2013 |
| Anchor Point | GOA | | 2010 | 0.1 / 2 | | | |
| Cordova | GOA | | 2017 | 0.1 / 1 | | | |
| Juneau/Douglas | GOA | | 2010, 2011, 2015(2) | 0.7 / 4 | | | |
| Nikolaevsk | GOA | | 2011, 2012 | 0.2 / 1 | | | |
| Port Lions | GOA | | 2013 | 0.1 / 1 | | | |
| Seward | GOA | | 2013, 2016, 2017 | 0.3 / 2 | 2010, 2011 | 0.2 / 1 | 2013 |
| Wasilla | GOA | | 2011(2), 2012(2), 2014, 2015 | 0.7 / 2 | | | 2013 |
| Delta Junction | Interior | | 2010, 2011, 2012, 2016 | 0.4 / 1 | | | |

*Note: If more than one vessel was active in a year, the number of vessels active that year is noted in parentheses.

## 7.1.2 BSAI Groundfish Fishery Dependency and Vulnerability to Community-Level Impacts of the Proposed Action Alternatives among Pacific Northwest Communities

Given the degree of centralization of ownership of the directly engaged BSAI groundfish fishery sectors in the Seattle MSA and the centralization of the support services provided by Seattle-based firms described in Section 6.6, potential adverse economic impacts associated with proposed action alternatives described in the DEIS to which this SIA is appended would largely accrue to the Seattle MSA in

particular and the Pacific Northwest in general, with the limited but notable exceptions described in Section 7.1.1 and specifically noted BSAI communities in Section 7.1.1.1.

As noted in economic analysis in the DEIS, numerous variables influence the impacts of PSC limit reduction on groundfish sectors, including environmental, regulatory, and behavioral variables. While harvesters cannot directly impact environmental or regulatory variables, they can impact behavioral variables through halibut avoidance strategies, all of which come with avoidance costs. These avoidance strategies include search time looking for grounds with lower halibut bycatch, fishing less efficient areas where there are fewer halibut, and changing catch handling techniques such as deck sorting, among others. These costs, which impact net revenues, are incurred regardless of whether or not the PSC limit becomes a constraint and cannot be quantified with available data. Other costs associated with PSC reduction include foregone groundfish revenues if halibut becomes constraining. These costs impact gross revenues but quantifying costs of foregone groundfish revenue resulting from PSC reductions would be speculative and highly uncertain (see DEIS Section 6.3.2).

***Potential Environmental Justice Concerns***

In terms of absolute numbers (based on existing participation/engagement patterns), whatever adverse impacts related to BSAI groundfish TLAS catcher vessel, BSAI groundfish Amendment 80 catcher/processor, and hook-and-line catcher/processor direct employment and income that would occur as the result of implementation of the proposed action alternative ultimately selected for implementation would largely accrue to the Seattle MSA. It is assumed that fishery-wide, catcher vessel skippers and crew are more-or-less representative of the general population of community of vessel ownership where crew recruiting likely takes place, so environmental justice concerns would not be likely. For catcher/processor crew, however, a different set of assumptions are used.

While no recent information from secondary sources on sector-wide catcher/processor crew demographics is readily available for this community impact analysis, an earlier (and now dated) Steller sea lion protection measure social impact assessment (NMFS 2001) indicated that the workforce population of the BSAI groundfish catcher/processor sector was substantially different demographically from the overall greater Seattle area, based on 2000 U.S. Census data for the community and on industry self-reported information for the same year. While the greater Seattle area was 23 percent minority in 2000, the catcher/processor workforce was 63 percent minority, according to industry data. The minority component of the various entity workforces within this sector was largely composed of individuals of Hispanic or Asian ancestry. Industry-provided data indicated that, in 2000, individual reporting entities were anywhere from about 36 percent minority to about 86 percent minority (NMFS 2001).

Although more recent data are not available for the entire sector, to facilitate the social impact assessment for an earlier BSAI halibut PSC limit revisions analysis (AECOM 2015), employee demographic information-based 2014 Equal Employment Opportunity Commission (EEOC) data were supplied by four firms with catcher/processors operating in the Amendment 80 catcher/processor sector. Together, these firms accounted for more than half of (10 of 18) trawl catcher/processors operating that year (2015) in the BSAI groundfish fisheries. The demographic data supplied by those firms are presented in Section 10.4 (Attachment D). As shown in that attachment, 66 percent of all employees working on the 10 catcher/processors represented in these data are minority employees. Minority representation is substantially higher for two of the job categories (factory foreman/quality control and processing labor/galley crew/cleaning, both around 75 percent), and in all but two job categories (captains and engineers) minority employees represented greater than 50 percent of all employees in that category. In contrast, minority representation in the general Seattle MSA 2010 population was 32 percent (1,099,535 minority residents out of a total population of 3,439,809 residents). Given the demographic characteristics summarized here, if disproportionate high and adverse impacts were to accrue to the Seattle MSA ownership address BSAI groundfish Amendment 80 catcher/processor workforce due to implementation of a proposed action alternative, environmental justice would potentially be an issue of concern.

Of potential concern would be loss of income opportunities for crew, with increased expenses in operations with additional halibut avoidance measures, and/or more time away from home with time-consuming and/or labor-intensive measures such as increased deck sorting. Although there are theoretically many more alternate employment and income opportunities for workers in a large urban area than in smaller communities or rural settings, there may not be comparable employment and earning potential ashore as is available to workers aboard these vessels, even in an otherwise robust job market, especially employees who have worked their way up from entry level positions.

## 7.2 Community Engagement, Dependence, Vulnerability, Resilience, and Risks to Fishing Community Sustained Participation in the Relevant BSAI Halibut Fisheries

### 7.2.1 Overview

The problematic nature of the no-action alternative for directed halibut fishery participants is inherently recognized in the Council's purpose and need statement. The potential for BSAI halibut-related community-level impacts from the proposed action alternatives in any given community is in part a function of present and future dependence of the community on the potentially affected BSAI halibut fisheries. Similar to what was described for relevant BSAI groundfish fisheries, dependency on the BSAI halibut fishery is influenced by the relative importance of BSAI halibut fisheries in the larger community fisheries sector(s), as well as the relative importance of the overall community fishery sector(s) within the larger community economic base (both in terms of private sector business activity and public revenues). Also important to community-level impact outcomes is the specific nature of local engagement in the potentially affected BSAI halibut fisheries and alternative employment, income, business, and public revenue opportunities available within the community as a result of the location, scale, and relative economic diversity of the community.

It is assumed that directed BSAI halibut fisheries, including the commercial, subsistence, and sport halibut fisheries, would potentially benefit from the various proposed alternatives relative to the degree that the BSAI halibut stock itself (spawning stock biomass) would potentially benefit from these proposed actions, particularly in low abundance conditions, and, especially in the case of the commercial directed halibut fishery, the effective redistribution of overall allocations between sectors that would occur to greater or lesser degrees under the various alternatives. Within a relatively few Alaska communities, beneficial impacts to these directed halibut fisheries could, under specific conditions, potentially serve to partially mitigate if not offset adverse impacts to direct participation in BSAI groundfish fisheries at the community level if not at the individual or sector operational level within the same communities, given the different combinations of engagement in and dependency on the different fisheries, although differences between the fisheries and sectors within the fisheries make potential assessments of net outcomes on the community level less than straightforward.

The communities most heavily engaged in the relevant BSAI groundfish fisheries (outside of participation in the CDQ program), however, are not often the communities most heavily engaged in/dependent upon the directed BSAI halibut fisheries. Further, it is important to note that there would be differences in the timing of adverse and beneficial impacts. While to the extent that they would be felt, impacts to communities engaged in the BSAI groundfish fisheries would be immediate and adverse; potential impacts to communities engaged in the BSAI halibut fisheries, to the extent that they would be felt, would not (except for a de-facto reallocation of halibut between fisheries) be immediately apparent and the full extent of their beneficial impact would not be realized for several years.

Especially when including communities outside of Alaska, it is also likely that the potential beneficial impacts to commercial halibut fishery participants would be relatively modest in absolute economic terms compared to potential negative impacts to BSAI groundfish fishery participants likely to be the most directly affected by the proposed BSAI halibut PSC limit revisions, at least over the short term, as discussed in the economic analysis in the DEIS to which this community analysis is appended. These figures, of course, do not consider a range of social and economic impacts on both the operational and community levels that would extend beyond gross revenue changes that may be experienced by direct sector participants. Particularly important is the fact that they do not take into account the sociocultural as well as the socioeconomic importance of the halibut fishery, across its multiple sectors, to numerous Alaska communities, especially small, remote, primarily indigenous communities, and the direct and indirect benefits that would accrue to these communities as a result of sustaining and improving the overall vitality of the BSAI halibut fisheries over the long run.

## 7.2.2 Background

In general, the potential beneficial impacts to the various halibut fisheries under the proposed action alternatives would be spread more widely among Alaska communities than would be the potential adverse impacts to the groundfish fisheries. While there are many more Alaska communities directly engaged in the BSAI halibut fisheries than in the BSAI groundfish fisheries in general, among the communities that are assumed to have the greatest potential for realizing substantial beneficial impacts under the proposed action alternatives are the 21 communities in the BSAI region selected by use of initial screening criteria for communities potentially substantially engaged in and/or substantially dependent on the BSAI halibut fishery[97] and those 16 communities across all regions identified by the PCFA exercise as highly engaged in either BSAI commercial halibut harvesting or processing sectors (described in overview in Section 4.3.2 and in detail in Section 10.1 (Attachment A).

It is important to note that as described in detail in the DEIS to which this SIA is appended, commercial halibut fisheries in Alaska have not been in equilibrium, with substantial reductions in the net weight pounds of halibut IFQ and CDQ harvests seen in recent years (along with ex-vessel gross revenues and crew payments, influenced both by volume of harvest and price per pound received by the vessel). While price may fluctuate due to many factors, it is assumed that trends of decline in volume of some amount (or lack of increase to former levels) would continue under the no-action alternative, resulting in negative impacts to potentially substantially engaged or substantially dependent BSAI halibut communities. Negative impacts could be compounded for those CDQ communities, such as St. Paul, that have chosen to focus local community fisheries development investments on direct engagement in the BSAI halibut fishery in terms of infrastructure, processing, and/or harvesting capacity; these investments could be placed at greater risk under continuing status quo conditions. Conversely, it is assumed that beneficial impacts would accrue to BSAI communities potentially substantially engaged or substantially dependent halibut communities in relation to rebounding accessibility to commercially viable halibut stocks.

[97] The initial screening criteria for communities potentially substantially engaged in and/or substantially dependent on the BSAI halibut fishery included all communities with a 2010-2018 annual average harvest engagement of 2.0 or more catcher vessels with local ownership addresses active in the BSAI halibut fishery and/or communities with an annual average BSAI halibut processing engagement of 0.5 or more locally operating shore-based processors that accepted BSAI halibut deliveries. A total of 21 communities in the BSAI region met these criteria. Nineteen are listed by name in Table 31 as having met the harvester criteria (Adak, Akutan, Atka, St. George, and Unalaska, APICDA region; St. Paul, CBSFA region; Chefornak, Hooper Bay, Kipnuk, Mekoryuk, Newtok, Nightmute, Quinhagak, Toksook Bay, and Tununak, CVRF region; Nome and Savoonga, NSEC region; and Dillingham and Togiak, BBEDC region) and two appear in Table 38 as having met the processor criteria (False Pass, APICDA region; and Twin Hills, BBEDC region) in addition to those listed in that table that also met the harvester criteria.

## 7.2.3 Potential Differential Distribution of Impacts to Communities Engaged in the Commercial Halibut Fishery

### 7.2.3.1 Alaska Communities

As noted in Section 5.7, dependence of the total resident-owned catcher vessel fleet (all resident-owned commercial fishing vessels, not just resident-owned vessels that participated in the halibut fishery) for these communities varied widely, as the fleets of some communities are more exclusively focused on the halibut fishery than are others. St. Paul, the BSAI region community with easily the highest 2010-2018 annual average catcher vessel Area 4 halibut ex-vessel gross revenues (at approximately $2.5 million, over 40 percent higher than Unalaska, the next closest community in the BSAI region), was also the community with the second-highest percentage of community fleet dependency on BSAI halibut ex-vessel gross revenues (99.8 percent) (Table 34). The only community with a higher local fleet dependency on BSAI halibut ex-vessel gross revenues was Savoonga (at 100 percent), which features a smaller scale community fleet.

Among the communities or small groups of communities for which revenue totals can be disclosed, three other communities (Adak/Atka, St. George, and Mekoryuk) have local ownership address catcher vessels fleets that were 80 percent or more dependent on BSAI halibut ex-vessel gross revenues on an annual average basis for the years 2010-2018, while four others were 25 percent or more dependent (Akutan, Unalaska, and Toksook Bay) (Table 33). In terms of ex-vessel gross revenues to BSAI halibut vessels specifically, among the potentially substantially engaged or substantially dependent halibut communities for which revenues can be disclosed on an individual community basis, nine have dependencies of 90 percent or greater and one is more than 80 percent dependent (Table 32).

As described in Section 6, in most cases, potentially substantially engaged or substantially dependent BSAI halibut communities located in the BSAI region itself are member communities of CDQ entities that receive substantial benefit from direct investment in commercial fishing operations. Many of these operations are directly involved in the harvesting and/or processing of BSAI groundfish and would be subject to decreases in BSAI halibut PSC limits during low abundance conditions under the proposed alternatives being considered. Ultimately, the level of direct impact to an individual CDQ entity and level of indirect impact to its member communities would depend on the individual levels of investment, range of investments with regard to fishery and geography, and overall financial management of other investments outside of commercial fishing.

While each CDQ entity manages their investments differently, one primary goal of the CDQ program is to encourage individual entities to use the returns from their engagement in commercial fishing to support regional economic growth, including the direct reinvestment in commercial fisheries, the support of community development activities, and the creation/maintenance of commercial fishing support infrastructure in member communities. As detailed in the regional discussions in Section 6, different CDQ groups have faced different circumstances and pursued different strategies regarding the establishment or sustainment of an in-region small boat commercial halibut fishery. Some CDQ regions are coincident with Area 4E which has a 100 percent CDQ reserve, essentially meaning that engagement of small, locally owned vessels in a commercial halibut fishery would necessarily be mediated by the CDQ group; in other CDQ regions with different levels of CDQ reserve, individuals, assuming they own or otherwise have the means to acquire or access IFQ quota, have the option of engaging in the fishery directly without going through the local CDQ entity.

For those CDQ groups whose experience in, or assessment of, supporting an in-region small boat commercial halibut fishery would indicate that the effort is not or would not be sustainable, especially under low abundance conditions, it is unknown whether the beneficial impacts that may accrue from implementation of one or more of the proposed alternatives would be sufficient to pass a tipping point

whereby in-region halibut fisheries would be considered sustainable even in low abundance conditions. For this reason, it is difficult to predict whether implementation of any one of the proposed alternatives would result in a different pattern of in-region CDQ community commercial small boat direct halibut fishery engagement than is seen at present.

***Potential Environmental Justice Concerns***

The potentially substantially engaged or substantially dependent BSAI halibut communities as determined by use of initial screening criteria that would potentially experience high and adverse impacts under the no-action alternative, and that would potentially benefit the most from the action alternative, include communities with high proportions of minority populations and high proportions of low-income populations. In terms of minority populations, of the 17 potentially substantially engaged or substantially dependent BSAI halibut communities as determined by use of initial screening criteria, in 2010 minority residents (including Alaska Native residents) accounted for more than 90 percent of the population in 13 communities, between 80 and 90 percent of the population in two communities, and more than 65 percent of the population in the remaining two communities. In terms of Alaska Native populations specifically:

- Of the 17 communities identified as BSAI halibut dependent communities, 15 are members of CDQ groups.
- Of the potentially substantially engaged or substantially dependent BSAI halibut communities as determined by use of initial screening criteria that are also CDQ communities, Alaska Native residents make up over 90 percent of the total population in 11 of the communities (Atka, Chefornak, Hooper Bay, Kipnuk, Mekoryuk, Newtok, Nightmute, Quinhagak, Toksook Bay, Tununak, and Savoonga), over 80 percent of the total population in two communities (St. Paul and St. George), and over 50 percent in one community (Nome).
- In the other BSAI halibut-dependent CDQ community (Akutan), and in the two BSAI halibut-dependent non-CDQ communities (Adak and Unalaska), Alaska Native residents make up between five and six percent of the total population of these communities.

In terms of low-income populations, of the 17 potentially substantially engaged or substantially dependent BSAI halibut communities as determined by use of initial screening criteria, as of the 2013-2017 5-Year American Community Survey:

- Three had between 40 and less than 50 percent of their residents living below the poverty threshold (Adak, Hooper Bay, and Savoonga);
- Five had between 30 and less than 40 percent of their residents living below the poverty threshold (Kipnuk, Newtok, Nightmute, Quinhagak, and Tununak);
- One had between 20 and less than 30 percent of their residents living below the poverty threshold (Toksook Bay);
- Five had between 10 and less than 20 percent of their residents living below the poverty threshold (Akutan, St. Paul, Chefornak, Mekoryuk, and Nome).
- Three had less than 10 percent of their residents living below the poverty threshold (Atka, St. George, and Unalaska).

Given these demographics, if these communities were to experience disproportionate high and adverse impacts under the no-action alternative, environmental justice would be a concern. Conversely, if these communities were to experience beneficial impacts under the action alternative, environmental justice would not be an issue of concern.

#### 7.2.3.2 Pacific Northwest Communities

As noted in Section 6.6, the Seattle MSA is also substantially engaged in the BSAI/Area 4 halibut fishery as measured by ownership address of actively participating catcher vessels, among other indicators of engagement. Its engagement in the BSAI halibut fishery is not as dominant relative to that of Alaska communities, however, compared to its relative engagement in the BSAI groundfish fisheries likely to be most directly affected by the proposed alternatives. No community level adverse impacts related to the BSAI halibut fishery are anticipated to the Seattle MSA under either the no action alterative or the proposed action alternatives.

### 7.2.4 Potential Impacts to BSAI Communities Engaged in the Subsistence Halibut Fishery

Subsistence harvest of halibut would not be directly affected by the proposed action alternatives. Unlike the commercial halibut fishery, the subsistence halibut fishery would not benefit from potential reallocations between the BSAI groundfish and the BSAI directed halibut fisheries under the proposed alternatives. As noted in the DEIS to which this community analysis is appended, the IPHC accounts for incidental halibut removals in the groundfish fisheries, recreational and subsistence catches, and other sources of halibut mortality before setting commercial halibut catch limits each year. Each year, the IPHC estimates subsistence harvest by using the actual harvest level from the previous year as a base, and then adjusts the estimate by considering how accurate the previous year's harvest estimate was compared to actual harvest for that year. While subsistence removals are accounted for in setting the commercial halibut catch limits, subsistence halibut harvests are not constrained by this process. There are no caps on removals from Area 4 in the subsistence halibut fishery analogous to quotas established annually for the commercial halibut fishery, nor are there size limits on halibut harvested for subsistence use. In Areas 4A and 4B, encompassing the communities of Akutan, Unalaska, Nikolski, Atka, and Adak, under a SHARC permit there is a harvest limit of 20 halibut per person per day and no possession limit and a limit of 30 hooks per person onboard up to 90 hooks per vessel; in Areas 4C, 4D, and 4E, which encompass all of the other BSAI area communities, there are no daily or possession limits and there are no hook limits under SHARC permits.[98]

Subsistence halibut harvests (and harvesters) could indirectly benefit from the implementation of the proposed action alternatives if the proposed action ultimately implemented were to result in changes to the spatial distribution of halibut spawning masses, an overall improvement in availability of halibut for subsistence harvest, and/or an accompanying decrease in effort and expense in harvesting halibut for subsistence use. Beyond direct use of halibut as a subsistence resource, the proposed action alternatives could have impacts on other subsistence pursuits. These types of impacts fall into two main categories:

- *Impacts to other subsistence pursuits as a result of loss of income from the BSAI groundfish fishery under the action alternatives (or the BSAI halibut fishery under the no-action alternative).* This income could be used to purchase fuel, vehicles, or other subsistence-related gear, or otherwise offset expenses required to engage in a range of subsistence pursuits. These types of impacts could be experienced by anyone engaged in the potentially affected fisheries who uses income derived from the fishery to help capitalize subsistence pursuits, regardless of the community of residence of the individual involved or the location of those subsistence pursuits. These types of impacts, then, could occur in areas far removed from the location of the management action itself (e.g., these types of impacts could, for example, theoretically be felt by residents of relevant CDQ communities if there were a decline in BSAI groundfish revenues that would have otherwise been put to use in underwriting subsistence efforts).

[98] https://www.fisheries.noaa.gov/alaska/subsistence-fishing/frequently-asked-questions-alaska-subsistence-halibut-program accessed 9/9/2019.

- *Impacts to other subsistence pursuits as a result of the loss of opportunity to use commercial fishing gear and vessels for subsistence pursuits.* This would result from vessels not being ready to go as a result of being prepared for commercial fishing or from the simultaneous harvest of fish and game resources during commercial fishing forays, including retention of halibut from commercial catch for subsistence use, where these assets are used in such a manner that commercial and subsistence catches are jointly produced, based on shared use of fixed and variable inputs.

In general, however, while the indirect impact of the proposed action alternatives on subsistence is difficult to assess for multiple reasons, joint production impacts in particular are likely to be concentrated among small halibut catcher vessel owners under the no-action alternative. In general, BSAI groundfish catcher vessels potentially affected by the proposed action alternatives are not likely to be used as joint production platforms, although there are a number of relatively small BSAI groundfish hook-and-line catcher vessels participating in the fishery that would be more likely to be used as joint production platforms than the typically larger BSAI groundfish trawl catcher vessels.

In terms of distribution of subsistence halibut fishing across communities, locally important subsistence halibut fishing takes place in many BSAI communities not directly engaged in the relevant BSAI groundfish fisheries; in a few cases, however, the communities most heavily engaged in the BSAI groundfish fisheries are the communities most engaged in the subsistence halibut fishery. For example, Unalaska and Akutan, two of the communities most heavily engaged in the relevant BSAI groundfish fisheries, represent two of the highest annual average halibut subsistence harvest communities as identified within the limitations of the available data. It is important to remember, however, that recent halibut subsistence data for BSAI communities are limited, so caution should be used in interpreting these data.

Further, subsistence harvest levels are influenced by myriad factors in addition to stock abundance but, at the highest level of generalization, it is assumed that if the proposed alternatives being considered would ultimately result in beneficial impacts to the biological status of the halibut stock itself (i.e., the spawning stock biomass), then they could potentially result in beneficial impacts over the long run to communities engaged in the subsistence halibut fisheries in the BSAI and eventually the GOA, off British Columbia, and along the Pacific Coast, but the magnitude of those beneficial impacts is unknown.

### 7.2.5 Potential Impacts to BSAI Communities Engaged in the Sport Halibut Fishery

Similar to the subsistence harvest of halibut, the sport harvest of halibut would not be directly affected by the proposed action alternatives as, unlike the commercial halibut fishery, the sport halibut fishery would not benefit from potential reallocations between the BSAI groundfish fishery and the BSAI commercial halibut fisheries if BSAI halibut PSC limits were reduced under low abundance conditions. As noted in Section 5.10, due to the relatively small volume of recreational use in Area 4 and the management under a daily bag limit rather than an area/sector allocation, IPHC accounts for recreational removals using a projection. There are no caps on removals from Area 4 in the sport halibut fishery analogous to quotas established annually for the commercial halibut fishery, but sport effort is constrained in Area 4 by a sport fishing season that extends from February 1 to December 31 and a bag limit of two halibut of any size per person per day unless otherwise specified, as noted in Section 5.10. Sport halibut harvests (and the guided and unguided sport halibut fisheries) could indirectly benefit from the implementation of the proposed action alternatives if reducing BSAI halibut PSC limits under low abundance conditions were to ultimately result in an overall improvement in availability of halibut for sport harvest, an accompanying decrease in effort and expense in harvesting halibut for sport use, and/or an increase in interest in halibut sport fishing in the region prompted by an increasing abundance of larger halibut.

### 7.2.6 Potential Cumulative Small/Rural Community and Cultural Context Issues

This SIA has largely focused on community impacts associated with the implementation of proposed BSAI halibut PSC limit revisions through the use of quantitative fishery information and through characterizations of a number of Alaskan regions and communities that describe the magnitude of engagement and dependency on those fisheries. This approach provides an analysis of anticipated socioeconomic impacts that may accompany implementation of the proposed action alternatives. It should be noted, however, that fishing regulatory actions can result in a wide range of sociocultural impacts in rural fishing communities. For many residents of these communities, commercial fishing is not seen as a stand-alone socioeconomic activity, but an integral part of self-identity. This relationship is compounded for those residents who come from families with multi-generational experience in commercial and/or subsistence fishing, particularly for those Alaska Native residents for whom fishing is part of a larger, integrated traditional subsistence and economic sustenance practice rooted in thousands of years of history. A number of researchers have explored the relationship between contemporary fishery management actions (e.g., IFQ, catch-shares, rationalization, limited entry, etc.) and the sociocultural impacts that can result, including impacts to identity.

The cultural importance of halibut (as a species) and halibut fishing (as traditional activity) is well documented in the anthropological literature for Alaska Native tribal groups throughout Alaska, including the Yup'ik, Aleut, Alutiiq, and Tlingit. In addition to being a primary subsistence resource for many coastal groups, halibut feature prominently in legends and parables. It is not uncommon to see halibut iconography in carvings, paintings, and textile handicrafts throughout the region, suggesting its traditional cultural importance.

In the BSAI region specifically, comments on an earlier BSAI halibut PSC limit revision SIA analysis (AECOM 2015) highlighted sociocultural importance of halibut for the residents of St. George and St. Paul. As described by community leaders, the phasing out of the commercial fur seal harvest in early 1980s forced a transition to commercial halibut fishing that now involves a high proportion of residents in both communities either directly or indirectly. However, prior to the beginning of the commercial halibut fishery in the Pribilofs, halibut fishing was a key subsistence activity through which traditional practices and traditional knowledge was passed down from one generation to another. In one essay published by St. Paul resident Larry Merculieff, the author describes landing a large halibut while reflecting on his youth and the connection he feels to his ancestors by engaging in subsistence halibut fishing (Merculieff n.d.). He notes during his description of reeling the halibut aboard his skiff:

> *Prior to the invention of the cotton line, my ancestors used strong lengths of kelp for their hand-lines. The smell, taste, and feel of this wondrous place in the middle of the Bering Sea were the same as what my ancestors experienced. This Sea is my experiential history book and a personal link to my ancestors. …*
>
> *Like the kayak to the Sea, I had to intimately connect with the halibut in order to feel her every nuance and intention, in order to succeed in bringing her on board. This connection is the foundation for what is often termed by native peoples as our Traditional Knowledge and Wisdom.*
>
> *I witnessed how the men would take information in through use of all their senses, about the clouds, color of water, direction of drift, speed of drift, timing between tides, movement of wind, cloud formations, type of sea bottom, and shape and movement of the Sea in the areas we were in. I began to understand the value of self-awareness and necessity of remaining connected to the Sea, the air, and the land for success in catching halibut and to be safe. I was learning an ancient language of communication with the Bering Sea, Mother Earth, and Father Sky, one that allowed our people survive and thrive in one of the most challenging of conditions for hundreds of generations.*

The intersection of commercial fishery management and subsistence resource use has also been a topic of recent research in the Bering Sea. For example, a relatively recent study documenting subsistence activities in the Bering Sea communities of Akutan, St. Paul, Togiak, Emmonak, and Savoonga found that survey respondents provided a range of economic, environmental, and personal explanations for recent changes in their subsistence harvesting activities (Fall et al. 2013). Reedy-Maschner and Maschner (2012) have also found that fishermen who participate in commercial fishing in the region are often among the most central providers in subsistence networks in their local community and as involvement in commercial fishing changes in small, rural Alaskan communities, the level of access to subsistence resources can change. It is assumed that the decline of the in-region, small boat commercial halibut fishery in low halibut abundance conditions in the CVRF region likely has altered access to halibut as a subsistence resource, no studies are apparently yet available to document how sharing networks may have evolved under those changed conditions.

While sustained participation of fishing communities in the BSAI groundfish or BSAI halibut fisheries would not appear to be directly at risk from implementation of the proposed action or alternatives, the available literature and recent NPFMC analyses underlines the fact that the proposed action is not taking place in isolation. Existing trends suggest that sustained participation in a range of commercial fisheries by residents of small communities in the region has become more challenging in recent years, with less inherent flexibility to adjust to both short- and long-term fluctuations in resource availability (as well as to changing markets for seafood products). This flexibility is widely perceived in the communities as a key element in an overall adaptive strategy practiced in subsistence and economic contexts in the region for generations. This strategy involves piecing together individual livings (and often local economies) with an employment and income plurality approach. This plurality approach is particularly important given that the availability of non-fishing alternatives for income and employment are limited and, like the natural resources (and market factors) that underpin commercial fishing opportunities, tend to be subject to both short- and long-term fluctuations. This ongoing fluctuation in non-fishing opportunities further reinforces the importance of flexibility in the pursuit of a range of commercial fishing opportunities to enable individuals and communities the ability to successfully combine fishing and non-fishing as well as commercial and subsistence pursuits considered critical to long-term socioeconomic and sociocultural survival if not stability. To the extent that the proposed alternatives would serve to provide for more opportunities for the success of small-scale commercial halibut fisheries during periods of low resource abundance, overall sustained participation in a range of local fisheries by residents of the smaller communities in particular would be more secure.

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# 9 List of Persons Consulted

Clydina Bailey – NOAA Fisheries Alaska Regional Office, Restricted Access Management Program
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Tim Cusick –Westward Fleet Cooperative
Dustan Dickerson – F/V Raven Bay
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Tom Enlow – UniSea
Luke Fanning – Aleutian Pribilof Islands Community Development Association
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Dave Magone – Charter Vessel Lucile
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Darryl Pelkey – F/V Daybreak
Trevor Shaisnikoff – F/V Cape Kalekta
Gary Torres – Trident Seafoods
Jim Touza – Icicle Seafoods
Chris Salts – Ounalashka Corporation
Nick Souza – Coastal Villages Seafoods
George Vernon – Charter Vessel Aftermath
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Sinclair Wilt – Westward Seafoods
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# 10 Attachments

# 10.1 Attachment A: Fisheries Engagement Indices for BSAI/Area 4 Halibut Communities

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The National Marine Fisheries Service (NMFS) has developed a framework to create quantitative indices to help understand community well-being and participation in marine fisheries.[99, 100] The Alaska Fisheries Science Center's Economic and Social Sciences Research Program has adapted this framework to develop a set of performance metrics to track fisheries participation over time using pre-existing data for all communities participating in commercial fisheries. These performance metrics provide information to examine the degree to which Alaska communities participate in different aspects of commercial, recreational, and subsistence fisheries.[101, 102] This analysis focuses specifically on those communities engaged in IPHC Area 4 halibut harvesting and processing activities. The purpose of this analysis is to explore the degree to which communities are engaged in Area 4 halibut harvesting and processing in Alaska fisheries and how their participation has changed over time. These indices can be used to provide information about the degree to which communities have sustained participation in this fishery over time to support NMFS and NPMFC decision making processes as they relate to National Standard 8.[103]

## 10.1.1 Methods

### 10.1.1.1 Commercial Fisheries Engagement Indices

Communities were included in the analysis based on the activity of vessels that are prosecuting the IPHC Area 4 halibut fishery over the period 2010-2018. This analysis considers two somewhat distinct aspects of community engagement in commercial fisheries in Alaska: a) commercial processing engagement reflects activities associated with vessel landings and actual fish deliveries in the community and associated processing employment, municipal tax revenues, demand for supplies, and profits; b) commercial harvesting engagement reflects activities associated with the community of residence of the vessel owners engaged in this fishery as that community also benefits from the fisheries activity and associated income, including some portion of crew and other supplies that will also be procured in this

[99] Jepson, M., & Colburn, L. L. (2013). *Development of social indicators of fishing community vulnerability and resilience in the US southeast and northeast regions*. US Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service.

[100] A map of the most recent social indicators for coastal communities in the U.S. is available at: https://www.st.nmfs.noaa.gov/humandimensions/social-indicators/map

[101] Kasperski, S., & Himes-Cornell, A. (2014). Indicators of fishing engagement and reliance of Alaskan fishing communities. *Alaska Fisheries Science Center Quarterly Report feature (January-February-March 2014)*.

[102] Himes-Cornell, A., & Kasperski, S. (2016). Using socioeconomic and fisheries involvement indices to understand Alaska fishing community well-being. *Coastal Management*, *44*(1), 36-70.

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

location. The communities that are highly engaged in processing in Alaska are not always the same as those engaged in the harvesting, and this analysis will consider these two aspects of engagement and their impacts separately.

All communities in Alaska with activities in these fisheries are included in the anslysis,[104] and non-Alaska communities are grouped into 5 groupings: the Seattle metropolitan statistical area (MSA), Other Washington, Oregon, and All Other States. Communities were included in the processing engagement analysis if any vessels made IPHC Area 4 halibut landings in the community from 2010-2018 and in the harvesting engagement analysis if the owner of a vessel that fished in the fisheries resided in the community for any year from 2010 through 2018.[105] Processing engagement is represented by the amount of landings and associated revenues from landings in the community, the number of vessels delivering any Area 4 halibut in the community, and the number of processors in the community processing Area 4 halibut. Harvesting engagement is represented by the Area 4 halibut landings and revenues associated with vessels owned by community residents (regardless of the location of landing), the number of vessels with Area 4 halibut landings owned by residents in the community, and the number of distinct resident vessel owners whose vessels made Area 4 halibut landings in any community. By separating commercial processing from commercial harvesting, the engagement indices highlight the importance of fisheries in communities that may not have a large amount of landings or processing in their community but have a large number of fishermen and/or vessel owners that participate in commercial fisheries based in the community.

To examine the relative harvesting and processing engagement of each community, a separate principal components factor analysis (PCFA) was conducted each year for each category to determine a community's engagement relative to all other Alaska communities. There are nine years in the study and two PCFAs are conducted each year (processing engagement and harvesting engagement) for a total of 18 different PCFAs summarized below.

PCFA is a variable reduction strategy that separates a large number of correlated variables into a set of fewer, linearly independent components. The first component from each PCFA, which by definition explains the most variation in the data, is used to create quantitative indices of engagement for each community by using the regression method of summing the standardized coefficient scores multiplied by the included variable values. A unique processing index and harvesting index value for each community in each year is created using the first un-rotated extracted factor from the PCFA, 14 of the 18 PCFAs resulted in single factor solutions with second factor eigenvalues below 1.00. Each index is normalized to have a mean of zero and a standard deviation of one for each year across communities. These indices are relative scores in that they represent each community's engagement in commercial fisheries within a single year relative to all other communities in that year. Indices are then appended across all years to create a time series of relative engagement in these two aspects of commercial fisheries over time.

Communities that scored above one (above one standard deviation from the mean of zero) for any year are classified as highly engaged for that particular year. These communities are used in additional analyses to explore the changes in their participation for communities that were highly engaged for all 9 years from 2010-2018 for processing engagement or harvesting engagement. It is important to note that since these are relative indices, a large change in the total number of active vessels over time will only cause a change in an index if one community loses a larger share of their vessels (or other commercial fisheries activities) than another community. If the change in number of active vessels (or other commercial fishing activities) are directly proportional to the existing number of vessels across communities, there will not be a change in the indices over time.

[104] Eagle River is included as part of Anchorage and Douglas is included as part of Juneau.

[105] The owner's community is determined from the CFEC vessel registration each year.

#### 10.1.1.2 Regional Quotient

The regional quotient is a measure of the importance of the community's Area 4 halibut activities in terms of pounds landed or revenue generated from all Area 4 halibut fisheries. It is calculated as the landings or revenue attributable to a community, divided by the total landings or revenue from all communities and community groupings. The regional quotient is reported for revenue from landings in a community (similar to processing engagement). The regional quotient uses the same criteria for inclusion as the processing and harvesting engagement indices and is presented for all communities that were highly engaged for at least one year from 2010-2018.

### 10.1.2 Results

This section will report performance metrics of community participation in Alaska fisheries from 2010-2018. Data were collected for 59 communities or community groupings throughout the U.S. that had either some commercial Area 4 halibut fisheries landings or residents who owned vessels that were used in commercial Area 4 halibut fishing during this period. There were 27 communities that had some Area 4 halibut landings occurring in their community and were included in the commercial processing engagement analysis. In contrast, 54 of the 59 communities had a resident who owned a vessel that participated in commercial Area 4 halibut fishing and therefore were included in the commercial harvesting engagement analysis.

#### 10.1.2.1 Area 4 halibut Commercial Processing Engagement

The results of the commercial processing engagement PCFA analyses are shown in Table 84 which presents the eigenvalues, factor loadings, total variance explained, and Armor's theta reliability coefficient (Armor, 1974) for all of the variables included in each PCFA. The results suggest somewhat strong relationships among variables, particularly among ex-vessel value, pounds, and number of delivering vessels, and that a single index based on the first extracted factor explains nearly 70% of the variation in each of the variables in each year.

**Table 84. Commercial Processing Engagement PCFA Results**

| | Eigenvalues | | | | Factor Loadings | | | | 1st Eigenvalue Percent variance explained | Armor's Theta |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | 1 | 2 | 3 | 4 | Ex-vessel value | Pounds landed in community | Number of vessels delivering | Number of processors | | |
| 2010 | 2.68 | 0.86 | 0.46 | 0.00 | 0.96 | 0.96 | 0.79 | 0.46 | 0.67 | 0.84 |
| 2011 | 2.79 | 0.82 | 0.39 | 0.00 | 0.93 | 0.94 | 0.83 | 0.59 | 0.70 | 0.85 |
| 2012 | 2.78 | 0.81 | 0.41 | 0.00 | 0.93 | 0.93 | 0.81 | 0.62 | 0.69 | 0.85 |
| 2013 | 2.77 | 0.77 | 0.45 | 0.00 | 0.94 | 0.93 | 0.80 | 0.61 | 0.69 | 0.85 |
| 2014 | 2.92 | 0.92 | 0.16 | 0.00 | 0.96 | 0.97 | 0.94 | 0.43 | 0.73 | 0.88 |
| 2015 | 3.25 | 0.68 | 0.07 | 0.00 | 0.97 | 0.97 | 0.97 | 0.64 | 0.81 | 0.92 |
| 2016 | 3.28 | 0.67 | 0.05 | 0.00 | 0.97 | 0.97 | 0.98 | 0.66 | 0.82 | 0.93 |
| 2017 | 3.06 | 0.90 | 0.04 | 0.00 | 0.98 | 0.99 | 0.99 | 0.39 | 0.76 | 0.90 |
| 2018 | 3.21 | 0.72 | 0.07 | 0.00 | 0.98 | 0.97 | 0.97 | 0.61 | 0.80 | 0.92 |

In addition to the goodness of fit statistics of the analyses provided in Table 84, each PCFA provides an index score for each of the 27 communities included in the analyses. These index scores are presented in Table 85 for the six communities that were highly engaged (index score above one, which is one standard

deviation above the mean of zero) for at least one year from 2010-2018, and these cells are shaded in Table 85. The index is an indicator of the degree of participation in a community relative to the participation of other communities. It is a measure of the presence of commercial fishing in the federal fisheries in Alaska through fishing activity including pounds landed, revenue, processors and the number of delivering vessels in the Area 4 halibut fisheries.

**Table 85. Communities highly engaged in Area 4 halibut commercial processing for one or more years from 2010-2018**

| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|
| **Adak** | -0.75 | 0.14 | 0.86 | 0.20 | 0.22 | 0.29 | 0.34 | 0.34 | 1.52 |
| **Akutan** | 1.42 | 1.34 | 1.09 | 1.32 | 1.06 | 0.83 | 1.39 | 1.46 | 1.60 |
| **Anchorage** | -0.50 | 1.51 | 1.48 | 1.03 | 0.78 | -0.20 | -0.60 | -0.56 | -0.29 |
| **Kodiak** | 0.59 | 0.35 | 0.28 | 0.55 | 0.75 | 1.27 | 1.31 | 0.66 | 0.08 |
| **Saint Paul Island** | 2.40 | 2.24 | 0.81 | 0.74 | 0.09 | 0.40 | 0.40 | 0.61 | 0.50 |
| **Unalaska/Dutch Harbor** | 3.58 | 3.33 | 3.80 | 3.93 | 4.35 | 4.39 | 4.21 | 4.34 | 3.93 |

Note: Shaded cells are index scores above one (highly engaged) for at least one year from 2010-2018.

Of the six communities found in Table 85 and displayed in Figure 3, only Unalaska/Dutch Harbor was highly engaged in commercial processing all 9 years from 2010-2018. Unalaska/Dutch Harbor has the highest engagement scores over time, with each of the other five communities starting from very different positions and experiencing different trends over time with Adak increasing in processing engagement since 2010, St. Paul Island and Anchorage experiencing declines over the same period, and Kodiak and Akutan remaining relatively consistent over time. Adak experienced the largest increase in its processing engagement index score in 2018 and was the first year in which the community's processing engagement index score was above one and therefore deemed a highly engaged community. Anchorage's decline may be due to changes in the way processing operations listing Anchorage as their *intent to operate location* even if the plant is not located in Anchorage. Future versions of this analysis will attempt to disentangle these relationships, especially as they relate to processing operations in the BSAI region.

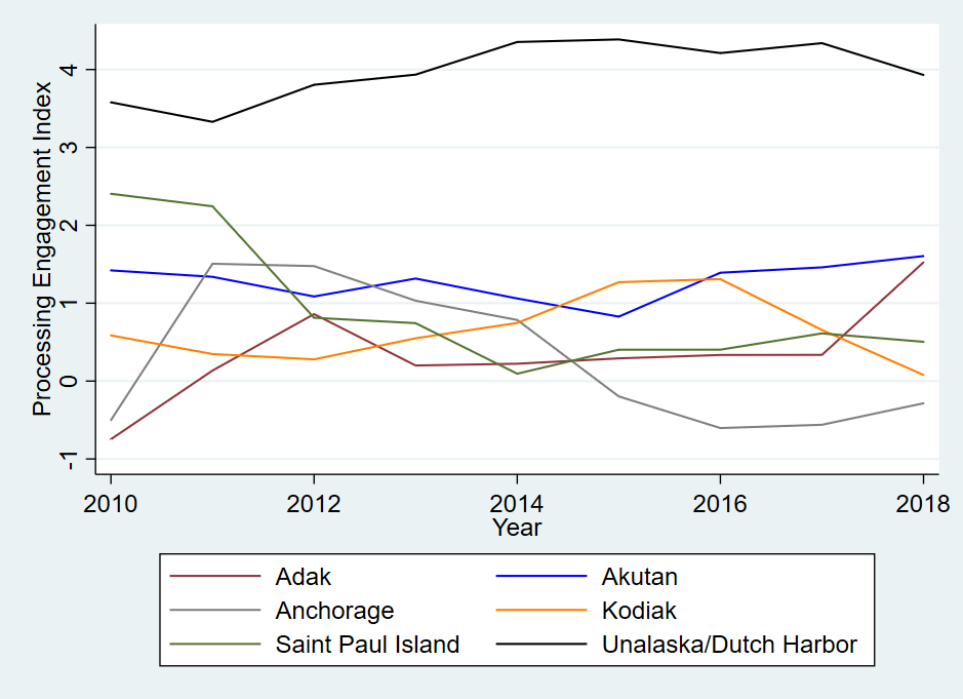


**Figure 3. Index scores of communities highly engaged in commercial Area 4 halibut processing for at least one year from 2010-2018.**

### 10.1.2.2 Processing Regional Quotient

Another measure of a community's participation in commercial Area 4 halibut fisheries is its processing regional quotient of revenues, defined as the share of commercial revenues within a community out of the total North Pacific Area 4 halibut revenues.[106] It is an indicator of the percentage contribution in revenue landed in that community relative the total revenue from all communities throughout the U.S. Figure 4 shows the processing regional quotient for revenue from 2010-2018.

[106] The regional quotient for pounds is not calculated as pounds and revenues across communities are very highly correlated for a single species and does not show meaningful differences across communities, but is available

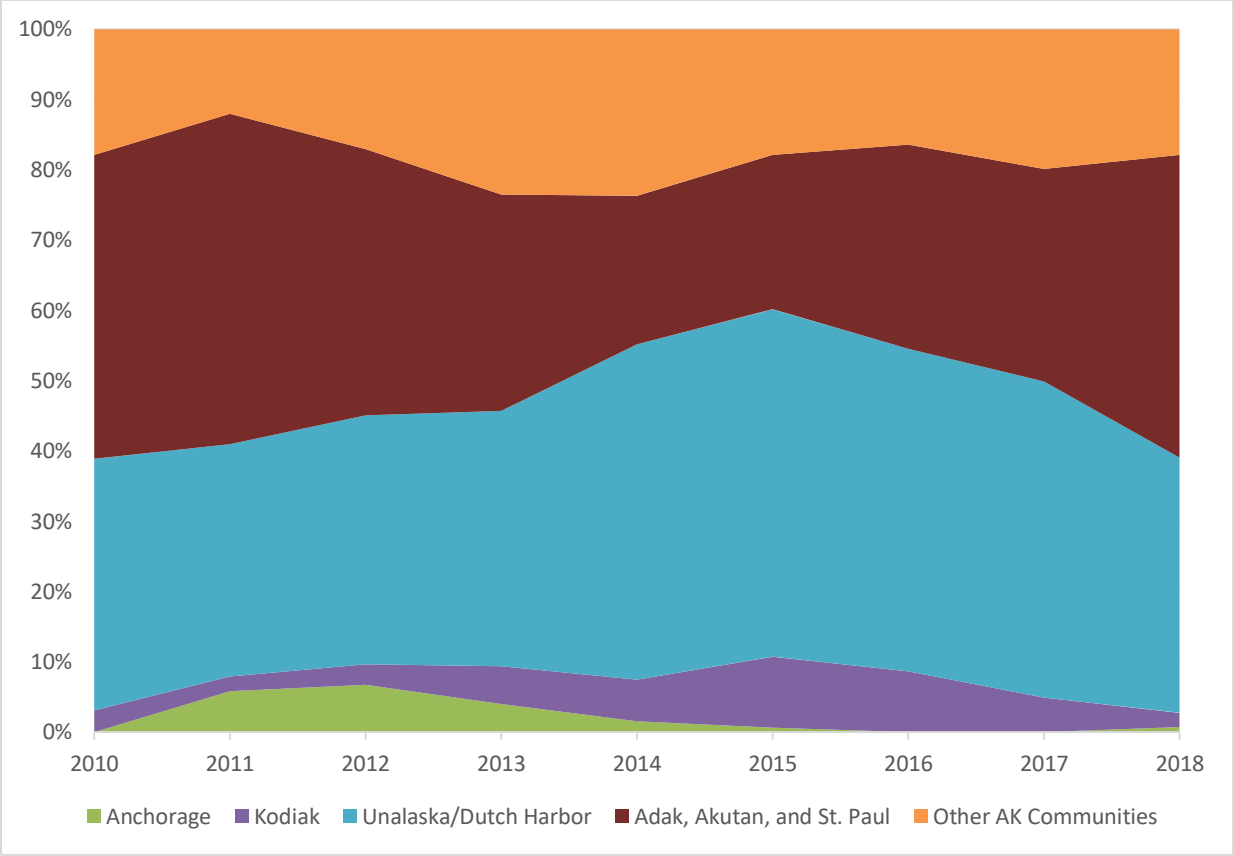


**Figure 4. Processing regional quotient of revenue for communities highly engaged in commercial Area 4 halibut processing for all years from 2010-2018.**

The most prominent community for processing Area 4 halibut in terms of ex-vessel revenue over this period has been Unalaska/Dutch Harbor, which accounts for approximately 41% of the value of Area 4 halibut retained in the North Pacific on average. This is followed by the grouping of Adak/Akutan/St. Paul Island (grouped for confidentiality purposes) at 34%, followed by all Other Communities at 18%.

### 10.1.2.3 Commercial Area 4 Halibut Harvesting Engagement

The results of the commercial Area 4 halibut harvesting engagement PCFA analyses are shown in Table 86 which presents the eigenvalues, factor loadings, total variance explained, and Armor's theta reliability coefficient (Armor, 1974) for all of the variables included in each PCFA. The results suggest somewhat strong relationships among variables and that a single index based on the first extracted factor explains approximately 70% of the variation in each of the variables in each year.

**Table 86. Commercial Harvesting Engagement PCFA Results**

| | Eigenvalues | | | | Factor Loadings | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | 1 | 2 | 3 | 4 | Ex-vessel value by resident owned vessels | Pounds landed by resident owned vessels | Number of vessels owned by residents | Number of vessel owners | 1st Eigenvalue Percent variance explained | Armor's Theta |
| 2010 | 2.89 | 1.11 | 0.00 | 0.00 | 0.85 | 0.85 | 0.85 | 0.85 | 0.72 | 0.87 |
| 2011 | 2.73 | 1.27 | 0.00 | 0.00 | 0.82 | 0.83 | 0.83 | 0.82 | 0.68 | 0.84 |
| 2012 | 2.85 | 1.14 | 0.00 | 0.00 | 0.84 | 0.85 | 0.84 | 0.84 | 0.71 | 0.87 |
| 2013 | 2.81 | 1.19 | 0.00 | 0.00 | 0.84 | 0.83 | 0.84 | 0.84 | 0.70 | 0.86 |
| 2014 | 3.41 | 0.59 | 0.00 | 0.00 | 0.92 | 0.93 | 0.93 | 0.92 | 0.85 | 0.94 |
| 2015 | 3.58 | 0.42 | 0.00 | 0.00 | 0.95 | 0.95 | 0.94 | 0.95 | 0.90 | 0.96 |
| 2016 | 3.63 | 0.36 | 0.00 | 0.00 | 0.95 | 0.95 | 0.95 | 0.95 | 0.91 | 0.97 |
| 2017 | 3.57 | 0.43 | 0.00 | 0.00 | 0.94 | 0.94 | 0.94 | 0.94 | 0.89 | 0.96 |
| 2018 | 3.69 | 0.31 | 0.00 | 0.00 | 0.96 | 0.96 | 0.96 | 0.96 | 0.92 | 0.97 |

Index scores derived from the PCFA results are presented in Table 87 for the 13 communities that were highly engaged (index score above one, which is one standard deviation above the mean of zero) for any year from 2010-2018. These cells are shaded in Table 87. The harvesting engagement index is an indicator of the degree of participation in a community relative to the participation of all other communities in Alaska. It is a measure of the presence of commercial Area 4 halibut fishing through residents who own commercial fishing vessels including Area 4 halibut pounds landed, revenue, the number of vessels harvesting Area 4 halibut, and the total number of vessel owners harvesting Area 4 halibut in a community.

**Table 87. Communities highly engaged in commercial harvesting for one or more years from 2010-2018**

| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|
| All Other States | -0.24 | -0.26 | -0.20 | 0.08 | 0.46 | 0.26 | 0.47 | 0.54 | 1.02 |
| Homer | 1.22 | 1.63 | 2.03 | 1.55 | 1.90 | 2.10 | 2.40 | 2.74 | 3.00 |
| Juneau | 0.28 | 0.44 | 0.27 | 0.25 | 1.11 | 0.76 | 0.63 | -0.13 | -0.10 |
| Kodiak | 2.30 | 1.67 | 1.56 | 1.79 | 1.82 | 1.85 | 2.33 | 1.58 | 1.57 |
| Mekoryuk | 1.48 | 1.44 | 1.34 | 1.30 | 0.90 | -0.54 | -0.53 | -0.53 | -0.54 |
| Other Washington | 0.67 | 0.52 | 0.21 | 0.30 | 0.94 | 0.89 | 1.02 | 1.02 | 1.40 |
| Saint Paul Island | 1.91 | 1.81 | 1.95 | 2.13 | 2.71 | 2.04 | 1.76 | 2.37 | 2.59 |
| Savoonga | 0.21 | 0.02 | 0.54 | 0.39 | 1.08 | 1.02 | 0.74 | 0.81 | 0.42 |
| Seattle MSA | 4.59 | 4.55 | 4.70 | 4.61 | 4.67 | 5.11 | 4.96 | 4.86 | 4.31 |
| Togiak | -0.05 | 0.17 | 0.64 | 0.15 | 1.04 | 1.16 | 1.22 | 1.25 | 1.12 |
| Toksook Bay | 1.82 | 2.13 | 1.92 | 1.94 | 0.49 | -0.54 | -0.53 | -0.53 | -0.54 |
| Tununak | 1.23 | 1.28 | 1.26 | 1.40 | -0.35 | -0.54 | -0.53 | -0.53 | -0.54 |
| Unalaska/Dutch Harbor | 0.97 | 0.71 | 0.81 | 0.84 | 0.96 | 1.38 | 1.14 | 0.96 | 1.49 |

*Shaded cells are index scores above one (which is one standard deviation above the mean of zero) for at least one year from 2010-2018.

Figure 5 displays the commercial Area 4 halibut harvesting engagement index for the 13 communities listed in Table 87. These trends will be explored in more detail below, but the most apparent trend from Figure 5 is that the Seattle Metropolitan Statistical Area (MSA – which includes King, Snohomish and Pierce Counties in Washington) grouping has a substantially higher level of harvesting engagement than many of the Alaska communities and community groupings, averaging 4.71 over the entire period while the next two highest average index scores are for St. Paul Island and Homer at 2.14 and 2.06, respectively.

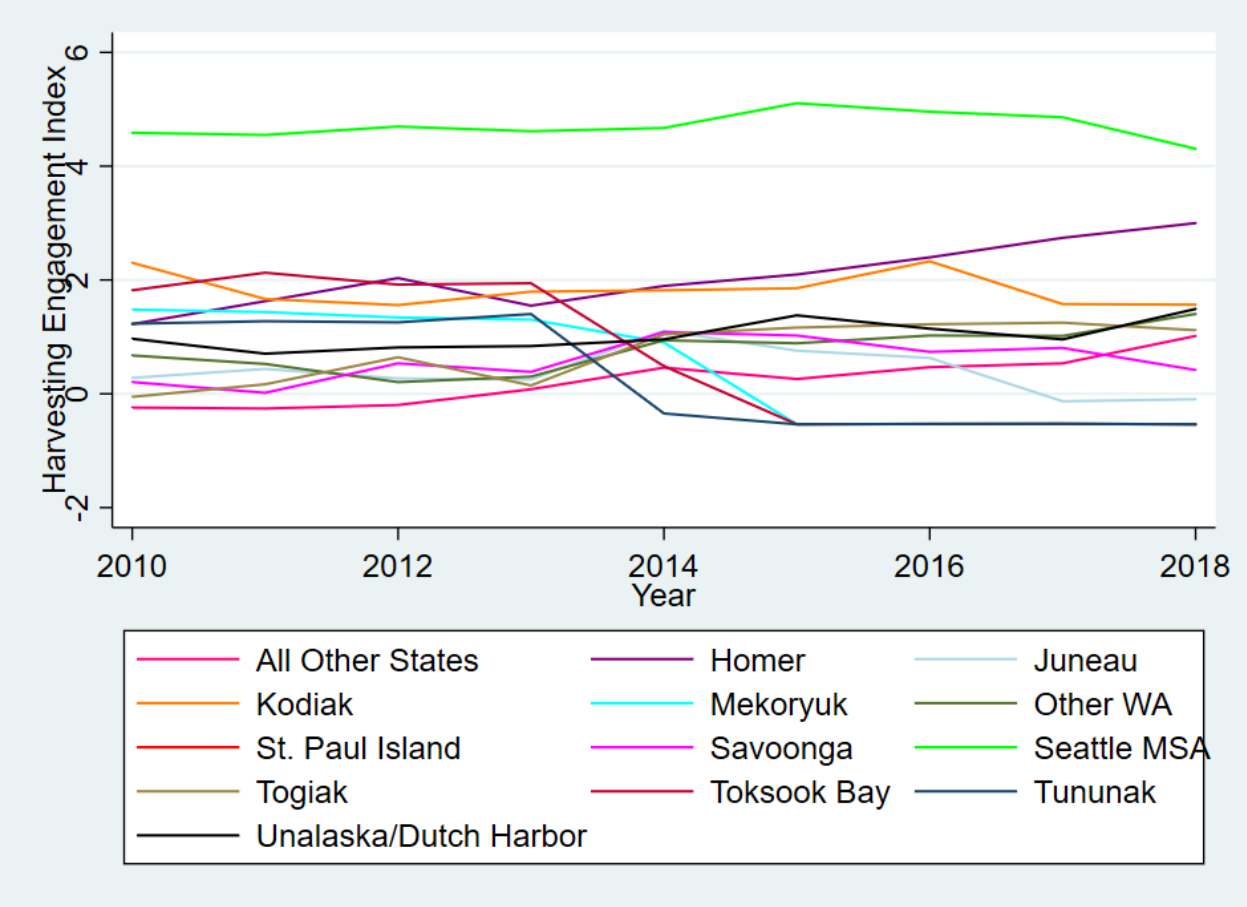


**Figure 5. Index scores of communities highly engaged in commercial Area 4 halibut harvest for at least one year from 2010-2018.**

Of the 13 communities listed in Table 87 and shown in Figure 5, four communities were highly engaged in commercial harvesting for all years from 2010-2018 (Figure 6). They are Homer, Kodiak, St. Paul Island, and the Seattle MSA. The Seattle MSA has by far the highest harvesting engagement scores over time, with fairly consistent index scores from 2010-2018 and experienced a slight decline 2018 relative to the average of 2013-2017. Both St. Paul Island and Kodiak have had periods of higher and lower engagement with this fishery over time but have experienced nearly opposite trends from 2016-2018 with St. Paul Island experiencing increases and Kodiak experiencing declines. Homer has experienced a fairly substantial increase in commercial Area 4 halibut harvesting engagement scores, which went up from 1.22 in 2010 to 3.00 in 2018.

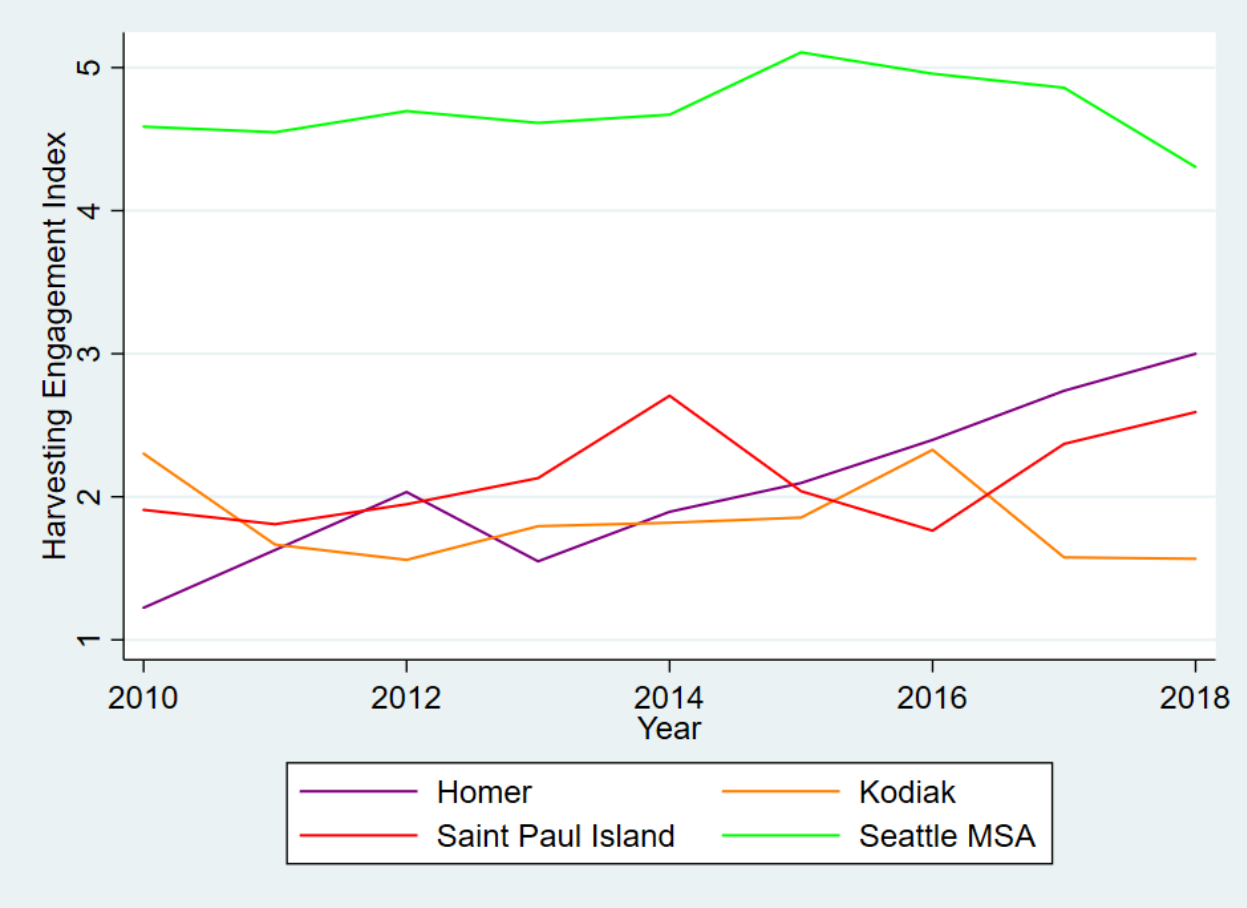


**Figure 6. Index scores of communities highly engaged in commercial Area 4 halibut harvest for all years from 2010-2018.**

Of the 13 communities highly engaged in commercial Area 4 halibut harvesting, three dropped entirely out of the harvesting portion of the fishery in a 2015 (Figure 7): Mekoryuk, Toksook Bay, and Tununak, but each experienced a decline in 2014 as well.

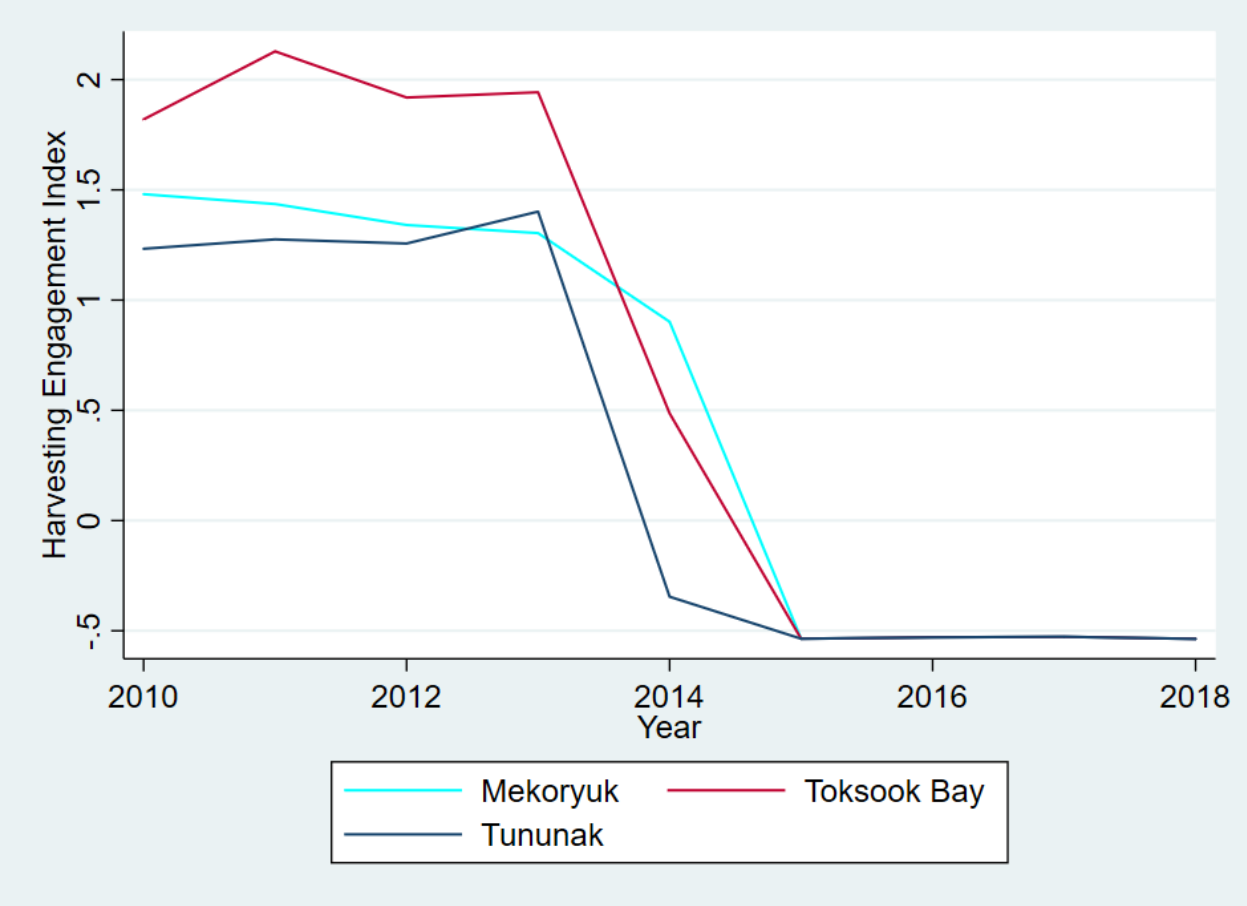


**Figure 7. Index scores of communities exiting the harvesting of Area 4 halibut fishery over the period 2010-2018.**

### 10.1.2.4 Harvesting Regional Quotient

Similar to the processing regional quotient, the harvesting regional quotient is defined as the share of IPHC Area 4 halibut commercial revenues attributable to vessel owners residing in each community compared with the total IPHC Area 4 halibut revenues. It is an indicator of the percentage contribution from resident vessel owners in a community relative the revenue from all communities throughout the U.S. Figure 8 shows the harvesting regional quotient for revenue from for all communities highly engaged for at least 1 year 2010-2018. The Seattle MSA grouping accounts for the largest percentage (24.3%) of Area 4 halibut in terms of ex-vessel harvesting revenues on average over this period, followed by Other Communities at 21.5%, Homer at 10.5% and Kodiak at 9.6%.

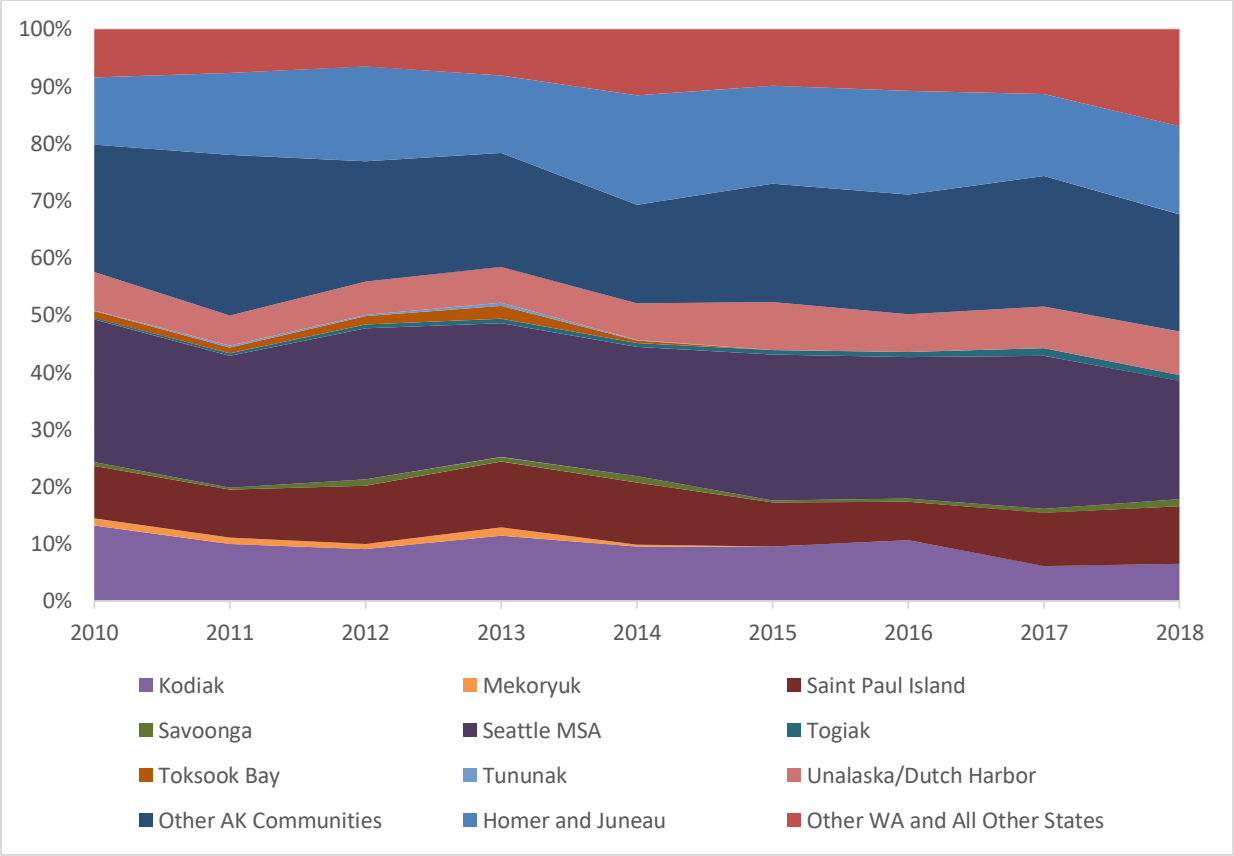


**Figure 8. Harvesting regional quotient of revenue for communities highly engaged in commercial harvesting for at least 1 year from 2010-2018.**

## 10.1.3 Participation Summary

Based on the community engagement index scores for both commercial Area 4 halibut processing and commercial Area 4 halibut harvesting engagement, communities were categorized into low (index scores below the mean of 0), medium (index scores between 0 and 0.5), medium-high (index scores between 0.50001 and 1), and high engagement (index scores above 1) for each year. The number of years a community is in each category for the processing and harvesting engagement indices is presented in Table 88. There are 31 communities or community groupings in Table 88 that had medium, medium-high, or high engagement in either commercial Area 4 halibut harvesting or commercial Area 4 halibut processing engagement. Sixteen communities were highly engaged in one aspect of commercial fisheries in any year from 2010-2018. There were six communities that were highly engaged in commercial Area 4 halibut processing engagement and 13 that were highly engaged in commercial Area 4 halibut harvesting engagement for at least one year from 2010-2018.

**Table 88. Number of years by commercial Area 4 halibut processing and commercial Area 4 halibut harvesting engagement level. Alaska communities not listed had low commercial Area 4 halibut processing and commercial Area 4 halibut harvesting engagement in all years,2010-2018**

| Community | Harvesting Engagement | | | | Processing Engagement | | | |
|---|---|---|---|---|---|---|---|---|
| | Low | Medium | Medium-High | High | Low | Medium | Medium-High | High |
| Adak | 9 | 0 | 0 | 0 | 1 | 6 | 1 | 1 |
| Akutan | 9 | 0 | 0 | 0 | 0 | 0 | 1 | 8 |
| All Other States | 3 | 4 | 1 | 1 | 0 | 0 | 0 | 0 |
| Anchorage | 4 | 5 | 0 | 0 | 5 | 0 | 1 | 3 |
| Atka | 7 | 2 | 0 | 0 | 3 | 5 | 1 | 0 |
| Chefornak | 6 | 0 | 3 | 0 | 9 | 0 | 0 | 0 |
| Delta Junction | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| Homer | 0 | 0 | 0 | 9 | 8 | 1 | 0 | 0 |
| Hooper Bay | 7 | 2 | 0 | 0 | 9 | 0 | 0 | 0 |
| Juneau | 2 | 4 | 2 | 1 | 0 | 0 | 0 | 0 |
| King Cove | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 0 |
| Kipnuk | 5 | 0 | 4 | 0 | 9 | 0 | 0 | 0 |
| Kodiak | 0 | 0 | 0 | 9 | 0 | 3 | 4 | 2 |
| Mekoryuk | 4 | 0 | 1 | 4 | 9 | 0 | 0 | 0 |
| Newtok | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nome | 4 | 4 | 1 | 0 | 8 | 1 | 0 | 0 |
| Oregon | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Washington | 0 | 2 | 4 | 3 | 8 | 1 | 0 | 0 |
| Quinhagak | 7 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Saint George Island | 4 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| Saint Paul Island | 0 | 0 | 0 | 9 | 0 | 3 | 4 | 2 |
| Savoonga | 0 | 4 | 3 | 2 | 7 | 2 | 0 | 0 |
| Seattle MSA | 0 | 0 | 0 | 9 | 9 | 0 | 0 | 0 |
| Seward | 9 | 0 | 0 | 0 | 7 | 1 | 1 | 0 |
| Sitka | 2 | 5 | 2 | 0 | 9 | 0 | 0 | 0 |
| Togiak | 1 | 2 | 1 | 5 | 9 | 0 | 0 | 0 |
| Toksook Bay | 4 | 1 | 0 | 4 | 5 | 1 | 3 | 0 |
| Tununak | 5 | 0 | 0 | 4 | 6 | 3 | 0 | 0 |
| Twin Hills | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 0 |
| Unalaska/Dutch Harbor | 0 | 0 | 6 | 3 | 0 | 0 | 0 | 9 |
| Wasilla | 2 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |

# 10.2 Attachment B: Available EDR Community of Residence Data for Crew Members on BSAI Groundfish TLAS Sector Catcher Vessels, 2017

**Table 89. Number of Crew Positions on GOA Trawl Catcher Vessels Completing a GOA Economic Data Report also Participating in the BSAI Groundfish TLAS Sector Fishery, by Community of Vessel Ownership Address and Community of Crew Member Residence Address, 2017**

| Community of Catcher Vessel Ownership Address | State of Crew Member Residence | Community of Crew Member Residence | Number of ADFG Crew License and/or CFEC Gear Operator Permit Holders |
|---|---|---|---|
| **Alaska** | | | |
| ***Kodiak*** | Alaska | Anchor Point | 2 |
| | Alaska | Anchorage | 1 |
| | Alaska | Chiniak | 1 |
| | Alaska | Kodiak | 24 |
| | Alaska | Palmer | 1 |
| | Arizona | Gilbert | 1 |
| | Colorado | Fountain | 1 |
| | Illinois | Bolingbrook | 1 |
| | Ohio | Springfield | 1 |
| | Oregon | Dallas | 1 |
| | Oregon | Newport | 1 |
| | Oregon | Toledo | 1 |
| | Washington | Anacortes | 1 |
| | Washington | Neah Bay | 1 |
| | Washington | Seattle | 1 |
| | Washington | Tacoma | 3 |
| | Unknown | Unknown | 9 |
| | ***Kodiak Subtotal*** | | ***51*** |
| **Alaska Subtotal** | | | **51** |
| **Oregon** | | | |
| ***Siletz*** | Oregon | Molalla | 1 |
| | Oregon | Monroe | 1 |
| | Oregon | Newport | 4 |
| | Oregon | Siletz | 1 |
| | Unknown | Unknown | 1 |
| | ***Siletz Subtotal*** | | ***8*** |
| **Oregon Subtotal** | | | **8** |

| Community of Catcher Vessel Ownership Address | State of Crew Member Residence | Community of Crew Member Residence | Number of ADFG Crew License and/or CFEC Gear Operator Permit Holders |
|---|---|---|---|
| **Washington** | | | |
| ***Bellingham*** | Alaska | Kodiak | 2 |
| | Massachusetts | Quincy | 1 |
| | Washington | Edmonds | 1 |
| | Unknown | Unknown | 2 |
| | ***Bellingham Subtotal*** | | ***6*** |
| ***Camas*** | Alaska | Kodiak | 3 |
| | Alaska | Palmer | 1 |
| | Alaska | Wasilla | 1 |
| | ***Camas Subtotal*** | | ***5*** |
| ***Seattle**** | Alaska | Anchor Point | 1 |
| | Alaska | Dutch Harbor | 1 |
| | Alaska | Kodiak | 8 |
| | Alaska | Palmer | 1 |
| | Alaska | Petersburg | 1 |
| | American Samoa | Pago Pago | 1 |
| | Arizona | Tucson | 1 |
| | California | Bakersfield | 1 |
| | California | Porterville | 1 |
| | California | Simi Valley | 1 |
| | Colorado | Colorado Springs | 1 |
| | Florida | Bradenton | 1 |
| | Hawaii | Kailua | 1 |
| | Montana | Bigfork | 1 |
| | Montana | Somers | 1 |
| | New Mexico | Farmington | 1 |
| | New York | Syracuse | 1 |
| | Oregon | Bend | 1 |
| | Oregon | Grants Pass | 1 |
| | Oregon | Newport | 5 |
| | Oregon | Salem | 1 |
| | Oregon | Siletz | 1 |
| | Oregon | Toledo | 4 |
| | Washington | Anacortes | 2 |
| | Washington | Auburn | 1 |
| | Washington | Blaine | 1 |
| | Washington | Kent | 1 |
| | Washington | Lakewood | 2 |

| Community of Catcher Vessel Ownership Address | State of Crew Member Residence | Community of Crew Member Residence | Number of ADFG Crew License and/or CFEC Gear Operator Permit Holders |
|---|---|---|---|
| | Washington | Lynnwood | 1 |
| | Washington | Poulsbo | 1 |
| | Washington | Puyallup | 1 |
| | Washington | Redmond | 1 |
| | Washington | Seattle | 17 |
| | Washington | Sedro Woolley | 1 |
| | Washington | Spokane | 1 |
| | Washington | Wenatchee | 1 |
| | Washington | Westport | 1 |
| | Unknown | Unknown | 4 |
| | ***Seattle Subtotal*** | | ***73*** |
| ***South Bend*** | Oregon | Siletz | 1 |
| | Oregon | Toledo | 1 |
| | Washington | Everett | 1 |
| | Washington | South Bend | 1 |
| | ***South Bend Subtotal*** | | ***4*** |
| **Washington Subtotal** | | | **88** |
| **GRAND TOTAL (Unique Persons)** | | | **147** |

Source: Gulf of Alaska 2018 Trawl Catcher Vessel EDR Data

# 10.3 Attachment C: Available EDR Data for Crew Members on BSAI Groundfish Amendment 80 Sector Catcher/Processors, 2017

**Table 90. Summary Number of Positions and Employees Onboard BSAI Groundfish Amendment 80 Sector Catcher/Processors, 2017**

| Community of Vessel Ownership Address | No. of CPs | Average Number of Positions Onboard | | | | Number of Employees Onboard | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Fishing (Deck Crew) | Processing | All Other * | Total | Fishing (Deck Crew) | Processing | All Other * | Total |
| Seattle MSA | 14 | 5.7 | 26.9 | 8.5 | 41.1 | 164 | 1,187 | 374 | 1,725 |
| Other WA and Other States | 6 | 4.2 | 22.5 | 7.5 | 34.2 | 45 | 375 | 80 | 500 |
| **Grand Total** | **20** | **5.3** | **25.6** | **8.2** | **39.1** | **209** | **1,562** | **454** | **2,225** |

*Includes officers, engineers, cooks, etc.
Source: Amendment 80 EDR Data

**Table 91. Catcher/Processor Crew Community of Residence for BSAI Groundfish Amendment 80 Sector Catcher/Processors, 2017**

| State or Territory of Crew Member Residence | Community of Crew Member Residence | Number of Crew Licenses |
|---|---|---|
| **Washington Total** | | **462** |
| | Auburn | 4 |
| | Bellingham | 1 |
| | Bothell | 1 |
| | Bremerton | 2 |
| | Burien | 1 |
| | Carrolls | 1 |
| | Centralia | 2 |
| | Chelan | 1 |
| | Clinton | 1 |
| | Coupeville | 1 |
| | Eagle Point | 1 |
| | East Wenatchee | 2 |
| | Everett | 4 |
| | Federal Way | 8 |
| | Ferndale | 1 |
| | Fife | 1 |
| | Friday Harbor | 1 |
| | Gig Harbor | 2 |
| | Kennewick | 2 |
| | Kent | 2 |
| | Kirkland | 10 |
| | Lacey | 3 |

| State or Territory of Crew Member Residence | Community of Crew Member Residence | Number of Crew Licenses |
|---|---|---|
| | Lake Stevens | 1 |
| | Langley | 1 |
| | Longview | 1 |
| | Lynden | 1 |
| | Lynnwood | 2 |
| | Milton | 1 |
| | Monroe | 3 |
| | Mount Vernon | 2 |
| | Nampa | 1 |
| | Oak Harbor | 4 |
| | Olympia | 5 |
| | Pacific | 1 |
| | Pasco | 1 |
| | Port Orchard | 2 |
| | Port Townsend | 1 |
| | Poulsbo | 5 |
| | Puyallup | 4 |
| | Renton | 1 |
| | Richland | 1 |
| | SeaTac | 2 |
| | Seattle | 341 |
| | Shoreline | 1 |
| | Silverdale | 1 |
| | Soap Lake | 1 |
| | South Bend | 1 |
| | Spanaway | 1 |
| | Spokane | 4 |
| | Suquamish | 1 |
| | Tacoma | 11 |
| | Union Gap | 1 |
| | Wapato | 1 |
| | Wenatchee | 3 |
| | Woodland | 1 |
| | Yakima | 2 |
| **Alaska Total** | | **32** |
| | Anchorage | 8 |
| | Cordova | 1 |
| | Dutch Harbor | 11 |
| | Kodiak | 7 |
| | Seattle | 1 |
| | Wasilla | 3 |
| | Wrangell | 1 |

| State or Territory of Crew Member Residence | Community of Crew Member Residence | Number of Crew Licenses |
|---|---|---|
| **Maine Total** | | **16** |
| | Biddford | 1 |
| | Camden | 1 |
| | Cape Elizabeth | 1 |
| | Falmouth | 1 |
| | Gorham | 1 |
| | Hollis Center | 1 |
| | Hope | 1 |
| | Lincoln | 1 |
| | Millinocket | 1 |
| | Norway | 1 |
| | Old Town | 1 |
| | Portland | 2 |
| | South Portland | 1 |
| | Tenant Harbor | 1 |
| | Yarmouth | 1 |
| **California Total** | | **16** |
| | Altadena | 1 |
| | Brea | 1 |
| | Fontana | 1 |
| | Indio | 1 |
| | Maywood | 1 |
| | Modesto | 1 |
| | Moreno Valley | 1 |
| | Redding | 1 |
| | Rialto | 1 |
| | San Diego | 4 |
| | Stockton | 2 |
| | Wilmington | 1 |
| **Oregon Total** | | **10** |
| | Gresham | 2 |
| | Millsboro | 1 |
| | Milton Freewater | 1 |
| | Portland | 4 |
| | Salem | 1 |
| | Tigard | 1 |
| **Pennsylvania Total** | | **6** |
| | Allentown | 3 |
| | Gouldsboro | 1 |
| | Teonesta | 1 |
| | Waynesboro | 1 |

| State or Territory of Crew Member Residence | Community of Crew Member Residence | Number of Crew Licenses |
|---|---|---|
| **Arizona Total** | | **6** |
| | Chandler | 1 |
| | Gilbert | 1 |
| | Goodyear | 1 |
| | San Tan Valley | 1 |
| | Scottsdale | 1 |
| | Tucson | 1 |
| **Idaho Total** | | **4** |
| | Firth | 1 |
| | Hayden | 1 |
| | Pestfalls | 1 |
| | Post Falls | 1 |
| **Florida Total** | | **4** |
| | Flagler Beach | 1 |
| | Gulf Breeze | 1 |
| | Palm Coast | 1 |
| | White Springs | 1 |
| **Ohio Total** | | **3** |
| | Beloit | 1 |
| | Findlay | 1 |
| | Napoleon | 1 |
| **Montana Total** | | **3** |
| | Bigfork | 2 |
| | Fortine | 1 |
| **Massachusetts Total** | | **3** |
| | Bedford | 1 |
| | Fall River | 1 |
| | Halifax | 1 |
| **Hawaii Total** | | **3** |
| | Kapolei | 1 |
| | Paia | 2 |
| **Virginia Total** | | **3** |
| | Suffolk | 1 |
| | Virginia Beach | 1 |
| | Winchester | 1 |
| **Texas Total** | | **2** |
| | El Paso | 1 |
| | Woodway | 1 |
| **Utah Total** | | **2** |
| | Clearfield | 1 |

| State or Territory of Crew Member Residence | Community of Crew Member Residence | Number of Crew Licenses |
|---|---|---|
| | West Jordan | 1 |
| **Minnesota Total** | | **2** |
| | Maple Wood | 1 |
| | Onamia | 1 |
| **Other States/Territories Total** | | **79** |
| Puerto Rico | Aguada | 2 |
| Iowa | West Des Moines | 1 |
| Illinois | Lovington | 1 |
| Connecticut | Niantic | 1 |
| Colorado | Rifle | 1 |
| Alabama | Chunchula | 1 |
| American Samoa | Fagatogo Pago Pago | 1 |
| Mississippi | Lumberton | 1 |
| Missouri | Vanboren | 1 |
| Nevada | Las Vegas | 1 |
| New Mexico | Rio Rancho | 1 |
| Louisiana | Patterson | 1 |
| New Jersey | Woodstown | 1 |
| Nebraska | Fremont | 1 |
| No community linkage | | 64 |
| **Grand Total** | | **656** |

Source: Amendment 80 2018 EDR Data

# 10.4 Attachment D: Demographic Information by Job Category for Ten BSAI Groundfish Amendment 80 Sector Catcher/Processors Owned by Four Seattle MSA-Based Firms, 2014

**Table 92. Demographic Information by Job Category for Ten Amendment 80 BSAI Groundfish Trawl Catcher/Processors Owned by Five Seattle MSA-Based Firms, 2014**

| Job Categories | Total Employees | Non-Hispanic or Latino Employees (by Race) | | | | | | Hispanic or Latino Employees (any Race) | Total Minority Employees* | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | White | Black or African American | Native Hawaiian or other Pacific Islander | Asian | American Indian or Alaska Native | Other Race or Two or More Races | | Number | Percent |
| Captains | 31 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0% |
| Mates and deck crew/purser | 147 | 71 | 1 | 36 | 13 | 0 | 3 | 23 | 76 | 51.7% |
| Engineers | 86 | 65 | 2 | 4 | 4 | 1 | 0 | 10 | 21 | 24.4% |
| Factory foreman/quality control | 94 | 24 | 3 | 29 | 13 | 0 | 4 | 21 | 70 | 74.5% |
| Processing labor/galley crew/cleaning | 776 | 189 | 89 | 153 | 69 | 1 | 16 | 259 | 587 | 75.6% |
| Cook | 50 | 23 | 4 | 5 | 2 | 1 | 0 | 15 | 27 | 54.0% |
| **Total** | **1,184** | **403** | **99** | **227** | **101** | **3** | **23** | **328** | **781** | **66.0%** |

*Note: Total minority consists of all individuals except those self-identified as being both White and non-Hispanic or Latino.
Source: Industry-supplied spreadsheet generated from 2014 Equal Employment Opportunity Commission data, in AECOM 2016.