



New England Fishery Management Council

50 WATER STREET | NEWBURYPORT, MASSACHUSETTS 01950 | PHONE 978 465 0492 | FAX 978 465 3116

John F. Quinn, J.D., Ph.D., *Chairman* | Thomas A. Nies, *Executive Director*

MEMORANDUM

DATE: August 24, 2017
Revised September 14, 2017

TO: Whiting Committee and Advisory Panel

FROM: Whiting Plan Development Team (PDT)

SUBJECT: **Annual monitoring report and Amendment 22 preferred alternative recommendations**

The PDT received and reviewed an Annual Monitoring Report (AMR) from the Greater Atlantic Regional Fisheries Office (GARFO) that estimated whiting and red hake discards and summarized catch during fishing year (FY) 2016. The PDT also received and reviewed an assessment update (AU) from the Northeast Fisheries Science Center (NEFSC) for whiting and red hake stocks for calendar year 2016.

Annual Monitoring Report (AMR)

Catches for all stocks did not exceed the Annual Catch Limit (ACL) and therefore no post-season Accountability Measure (AM) would be triggered. The PDT notes that in FY2016, the in-season AM for northern red hake reduced the possession limit from 3,000 to 1,500 lbs. when landings exceeded 45% of the Total Allowable Landings (TAL) and to 400 lbs. when landings exceeded 62.5% of the TAL. These regulatory adjustments occurred on August 8, 2016, and August, 16, 2016, respectively. These actions prevented northern red hake catch from exceeding the ACL.

Because the northern red hake catch exceeded the ACL in 2015, it triggered a post-season AM to reduce the TAL trigger from 45% to 37.9%, when the northern red hake possession limit would be reduced from an initial 3,000 lbs. to 400 lbs.

The PDT notes that with increasing biomass (see AU and recommended 2018-2020 specifications below), a higher TAL trigger than 37.9% may be justified and would prevent the catch from exceeding the ACL. Decreases in the TAL trigger are automatic, but increasing them would require Council action.

In contrast, the recommended 2018-2020 specifications (see below) are much lower for southern red hake and 2016 catch exceeded the recommended ACL (1093 vs. 1007 mt). Thus, the Council should consider whether to modify the southern red hake possession limit or take other action to prevent the southern red hake catch from exceeding the new ACL. The PDT notes that although the Council could reduce the possession limit to 3,000 lbs., consistent with the northern red hake limit), the discard rate is 70%, limiting the effectiveness of possession limits to reduce catch. The PDT evaluated 2014-2016 data and determined that a very small proportion of trips exceeded landings of 3,000 lbs. of southern red hake (see figures below).

Figure 1. Frequency of red hake landings per trip during 2014-2016.

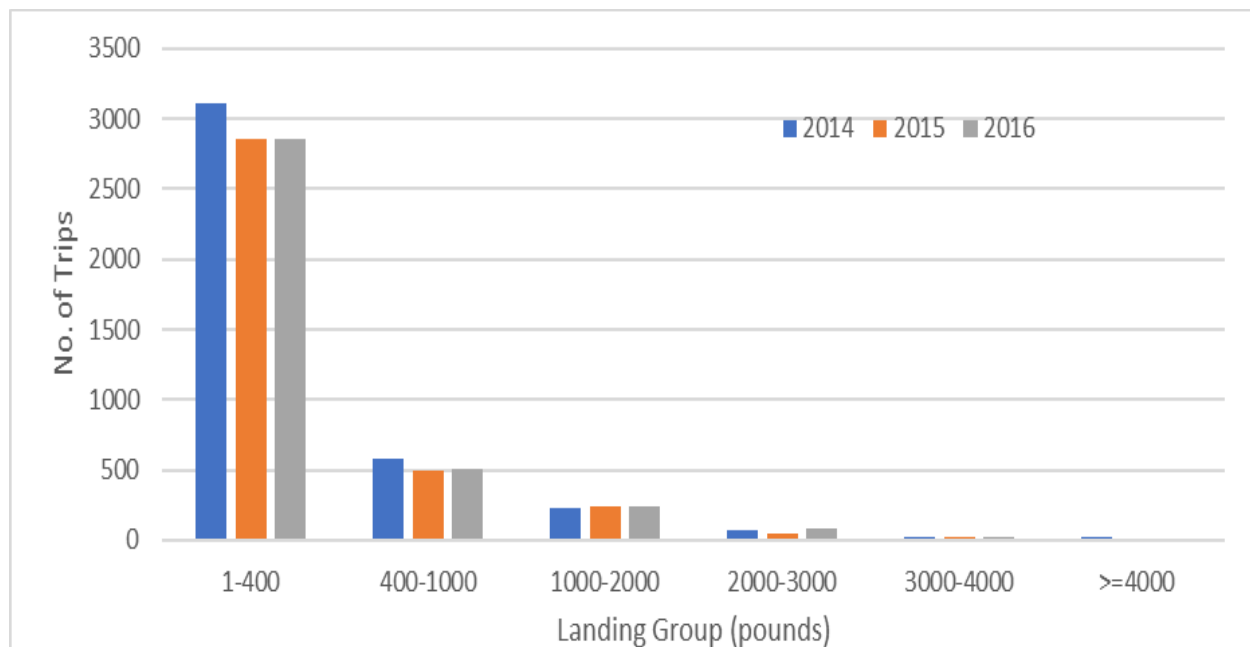
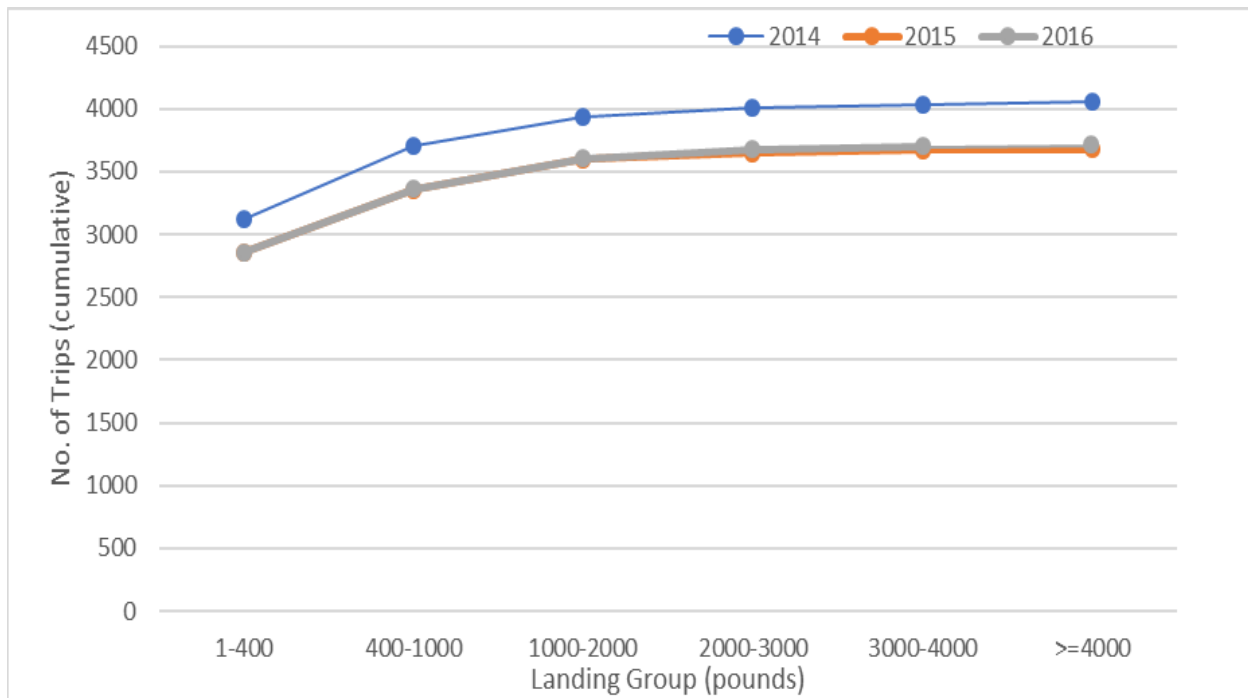


Figure 2. Cumulative frequency of red hake landings per trip during 2014-2016.



Assessment Update

The NEFSC conducted an assessment update for the northern and southern stocks of silver and red hakes, using the methods approved by the 2011 benchmark assessment to estimate stock biomass, mortality, and uncertainty. Offshore hake are not assessed because of insufficient catch and survey data, but a 4% adjustment to the specifications are included for southern whiting to account for occasional and incidental catches of offshore hake. For all stocks, catch was estimated through calendar year (CY) 2016. The fall surveys through 2016 were used to determine silver hake status and to estimate specifications. The spring surveys through 2017 were used to determine red hake status and to estimate specifications. The incomplete 2014 spring survey is no longer in the three-year moving average to determine status and therefore no post hoc adjustments are needed.

The stocks of northern red hake, northern silver hake, and southern silver hake are not overfished and overfishing was not occurring. Biomass of southern red hake has declined to the point where the three-year average biomass is below the minimum biomass threshold, and is therefore overfished. Catches on the other hand have not declined and in 2016 exceeded the overfishing level, thus overfishing is occurring. Red hake reference points are derived from a 1980-2010 base reference period (arithmetic average of 1980-2010 spring survey biomass – 1.27 kg/tow for the north and 0.51 kg/tow for the south; AIM exploitation index ratio of total catch to spring survey biomass for 1980-2009 – 0.16 kt/kg for the north and 3.04 kt/kg in the south).

Catches of northern red hake have increased, largely due to growth of the large 2014 year class. Catches in the south have increased more slowly, despite the large decline in survey biomass.

The majority of catch is discarded due to poor market demand. Most of the discards occur in the small-mesh trawl fisheries (whiting, squid, butterfish, etc.) while the northern red hake discards are evenly split between the small- and large-mesh trawl fisheries. The three-year moving average for mean spring biomass has also increased, while the mean spring biomass has dramatically declined and is now below the overfished threshold.

Northern red hake catches have increased in recent years, but southern red hake catches have declined albeit at a slower rate of decline than mean fall survey biomass, thus exploitation has increased but remains well below the base reference period (1973-1982). Overfishing both stocks is not occurring and it appears that the stocks could support somewhat higher exploitation, with negligible risk of exceeding the proxy for F_{msy} .

Except for 1963, the survey biomass and the three-year moving average are the highest in the northern red hake time series and relative exploitation remains well below the threshold (2.77 kt/kg). Although the 2015 fall survey biomass dipped below the minimum biomass threshold, the three-year moving average is between the threshold and target values (0.825 and 1.65 kg/tow, respectively), while the relative exploitation remains well below the threshold value.

The PDT notes that the last benchmark assessment was conducted in 2011, using data through 2010. While there hasn't been much additional research that would have bearing on stock structure or new models that should be used, resource and environmental conditions have changed. Application of an analytical model for assessing silver hake was rejected in part due to inconsistencies between the size structure observed in survey data and catch. At that time, consumption by predators was estimated and compared with commercial catch, but the additional mortality source did not resolve issues that were found in the analytical assessment model. Since then, age structure has expanded and productivity in the north appears to have improved. A benchmark re-assessment of the silver hake assessments may be more successful with new data than the past assessment was, allowing for a re-evaluation of the 1973-1982 reference period.

Lacking aging data, an analytical assessment of the red hake stocks was not successful. It was furthermore confounded by the uncertainty in the calibration coefficients between the RV Albatross and the RV Bigelow time series. The NEFSC has aged some of the red hake samples and an analytical assessment using only the consistent RV Bigelow surveys could make an analytic assessment of the red hake stocks possible.

The PDT recommends that a benchmark assessment for silver and red hake stocks should be scheduled by spring 2020 and conducted before the results are needed to set 2021-2024 specifications.

Recommended 2018-2020 specifications

Applying the three-year moving average for fall (silver hake) and spring (red hake) biomass to the reference period exploitation rate to estimate the Overfishing Level (OFL), and re-estimating scientific uncertainty in the reference points and biomass levels to estimate the ABCs, the PDT

recommends approval of the following specifications for 2018-2020. The TAL specifications take into account the proportion of state landings and estimated discards in 2016.

The specifications for northern silver hake and southern whiting apply a P* (a measure of scientific uncertainty) of 0.25 (lower values imply less risk). The Council approved this choice for setting the ABC because of a key ecosystem role for silver hake and because it would be costly to rebuild the stock if it became overfished. The specifications for red hake apply a P* value of 0.40, because red hake is a lower value species that would be a choke species for a fishery primarily targeting whiting.

The PDT is recommending that lower P* values for southern red hake be considered because stock biomass has declined to an overfished condition and we have a three-year specification cycle. Particularly, when stock biomass is declining, the last year of specifications will be riskier than the first and second. Also, a lower set of specifications will have a better chance of allowing stock rebuilding. The PDT however recognizes that additional management action may be needed, because most of the southern red hake catch is discarded.

Finally, the trends in stock biomass (increasing in the north and decreasing in the south) may be reflective of responses to warming water temperature, calling into question the suitability of existing biological reference points that use conditions during a base period (1973-1982 for silver hake; 1980-2009 for red hake). After two assessment updates, six years of revised specifications, and more data collection and analysis, it may be useful in a benchmark assessment to revisit the suitability of these index-based reference points.

Table 1. Recommended specifications for 2018-2020 based on updated assessments and catch estimates. Default P* values are shown above the line, with optional P* values associated with less scientific risk for southern red hake shown below the line.

Stock	OFL (mt)	P*	ABC (mt)	ACL (mt)	Change from 2017	Discard rate	TAL (mt)	Change from 2017.	TAL trigger (mt)
Northern silver hake	58,350	0.25	31,030	29,475	27%	9%	26,604	33%	23,944
Northern red hake	840	0.40	721	685	45%	60%	274	128%	104
Southern whiting	31,180	0.25	19,395	18,425	-37%	18%	14,465	-59%	13,018
Southern red hake	1,150	0.40	1,060	1,007	-38%	70%	305	-59%	274
Southern red hake	1,150	0.30	1,000	950	-42%	70%	288	-61%	259
Southern red hake	1,150	0.25	970	921	-44%	70%	262	-65%	236
Southern red hake	1,150	0.20	930	883	-46%	70%	268	-64%	241

Amendment 22 alternatives

The PDT has conducted analyzes of bycatch, capacity, and economic effects for the alternatives in the draft amendment. The main purpose of the amendment is to cap effort, preventing expansion of the fishery by new or repurposed vessels, making management measures more effective. With limited access, adjustments to measures could have the intended effect without causing the fishery to become unprofitable. This issue is particularly relevant as the catch limits for red hake have become constraining.

Based on the analyses that have been conducted on the alternatives, there does not seem to be a clearly superior choice among them that the PDT would recommend as a preferred alternative.

The amendment offers five limited access alternatives, shown in the table below, plus No Action (which would not implement limited access). The alternatives have various qualification periods and thresholds. As such, they accommodate a variety of historic and recent participants.

Table 2. Amendment 22 limited access alternatives and number of expected qualifying vessels.

Alternative	Qualifying period	Qualification Criteria (Pounds of small-mesh multispecies & number of qualifiers)	
		Category I	Category II
1	2008-2012* 5 years	500,000 lbs. 40 vessels	100,000 lbs. 74 vessels
2	2008-2012* 5 years	1,000,000 lbs. 20 vessels	20,000 lbs. 203 vessels
3	2008-2016 9 years	500,000 lbs. 51 vessels	100,000 lbs. 90 vessels
4	2000-2016 17 years	500,000 lbs. 55 vessels	100,000 lbs. 124 vessels
5	1996-2012* 17 years	1,000,000 lbs. 84 vessels	200,000 lbs. 159 vessels

From the total of 344 qualifiers for ANY alternative, there were 188 vessels that made no trips with landings more than 2000 lbs. of whiting or 400 lbs. of red hake during 2014-2016 (Table 3). Of these vessels, there were 148 that qualified for a Category II permit, but no Category I permit, plus 14 that qualified for a Category I permit, but no Category II permits. One vessel qualified for a Category I permit and 11 vessels qualified for a Category II permit in all five alternatives. Some of these vessels may be active in another fishery, associated with a confirmation of history permit, or retired.

Table 3. Cross tabulation of the number of alternatives that vessels would qualify for Category I and II permits. These vessels made no trips with more than 2000 lbs. of whiting landings on any trip during 2014-2016.

Category I	Category II						Total
	0	1	2	3	4	5	
0		87	38	10	2	11	148
1	11	11	1		2		25
2	2	3		7			12
3			1				1
4		1					1
5	1						1
Total	14	102	40	17	4	11	188

From the total of 344 qualifiers for ANY alternative, there were 156 vessels that made one or more trips with landings more than 2000 lbs. of whiting or 400 lbs. of red hake during 2014-2016 (Table 4). Of these vessels, there were 98 that qualified for a Category II permit, but no Category I permit, plus 21 that qualified for a Category I permit, but no Category II permits. Nineteen vessels qualified for a Category I permit and 26 vessels qualified for a Category II permit in all five alternatives. These vessels qualify for each Category across ALL action alternatives. Thus there are 111 vessels that fished for whiting during 2014-2016 whose qualification status would be different under the five alternatives.

Table 4. Cross tabulation of the number of alternatives that vessels would qualify for Category I and II permits. These vessels made one or more trips with more than 2000 lbs. of whiting landings during 2014-2016.

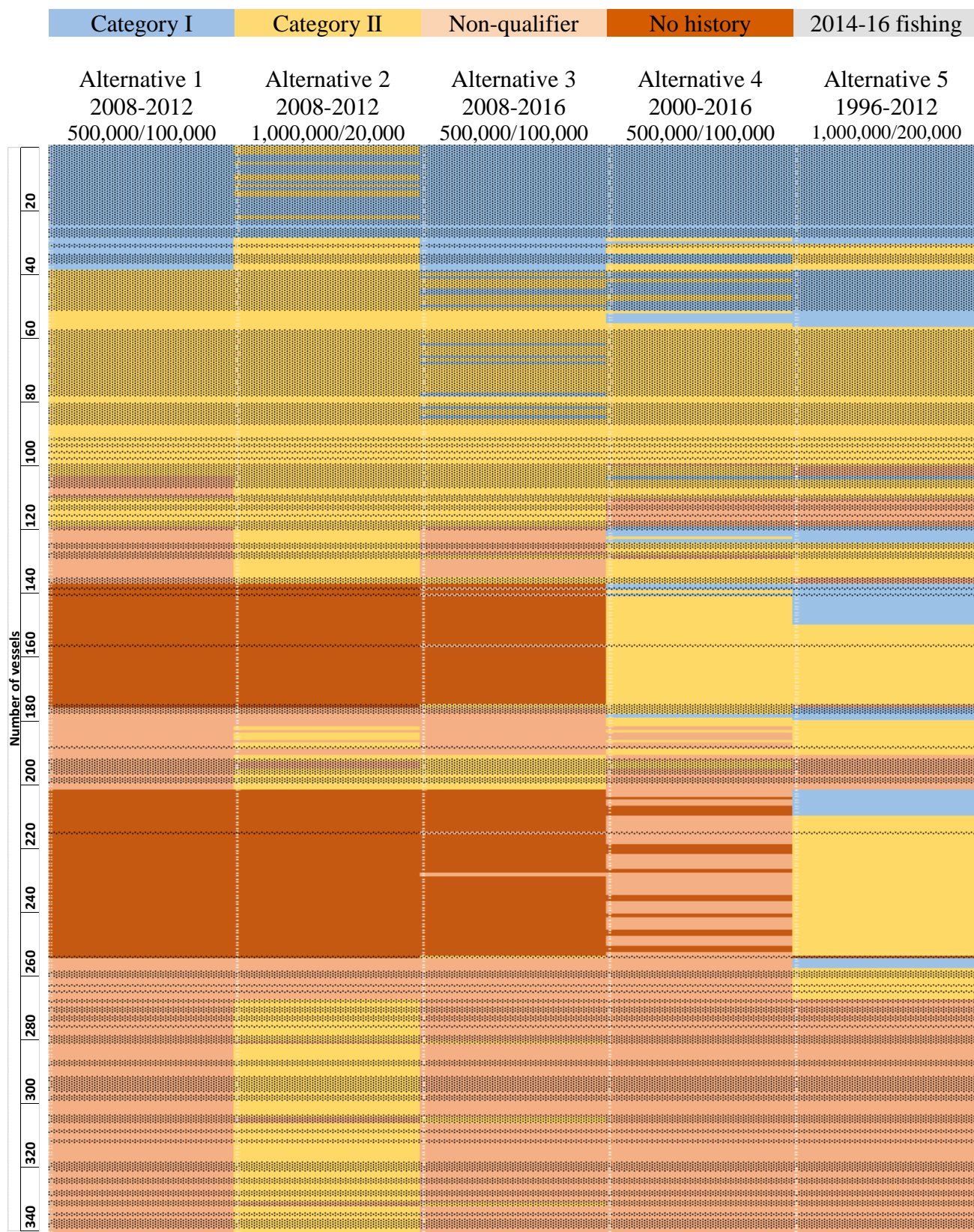
Category I	Category II						Total
	0	1	2	3	4	5	
0		42	10	12	8	26	98
1		2			9		11
2	2	1	1	7			11
3			7				7
4		10					10
5	19						19
Total	21	55	18	19	17	26	156

Figure 3 shows the potential limited access qualification status for all 344 vessels that would qualify for a limited access permit in ANY alternative. Each line represents a unique MRI or permit number and the figure is sorted by the number of alternatives that a vessel qualifies for a limited access permit (ones qualifying for a Category I or II permit in all five alternatives at the top). Category I qualifiers have a baby blue fill, Category II qualifiers have a yellow fill, vessels with whiting landings during the qualification period that do not exceed the Category II threshold are non-qualifiers have a pink fill, while vessels with no history during an alternative's qualification period have a red fill. Vessels that had one or more trips exceeding 2000 lbs. of

whiting or 400 lbs. of red hake would be affected by the Amendment 22 alternatives and are shaded.

Alternative 2 has the fewest Category I qualifiers (baby blue fill), but the most Category II qualifiers (yellow fill). Category I qualifiers are similar for Alternatives 1, 3, 4, and 5, but Alternatives 4 and particularly 5 qualify more vessels for Category I that were not fishing for whiting during 2014-2016 (unshaded). Some vessels would qualify for a Category II permit in Alternatives 4 and 5, but had no history in the fishery (red fill) during the qualification periods for Alternatives 1 to 3. Many of these vessels were not fishing for whiting during 2014-2016. There are a number of vessels toward the bottom of Figure 3 that fished for whiting in 2014-2016, but only qualify for a Category II permit for Alternative 2.

Figure 3. Qualification by vessel and alternative, coded by color. Each line is a unique MRI or permit number (N=344) and the gray shading represents vessels that had one or more trips landing more than 2000 lbs. of whiting during 2014-2016.



The PDT notes that the alternatives with the more historic qualification periods and/or the lowest thresholds are associated with more latent effort in the fishery, i.e. qualifiers that are not currently fishing for small-mesh multispecies. While the intent of the amendment is not cutting capacity, but capping growth of the fishery to make measures more effective, there is an essential tradeoff between the amount of latent effort (Table 5) and equitable access based on former fishery participation which cannot be quantified. Alternative 5 with the longest qualification period appears to admit the most latent effort into the fishery. In terms of bycatch, qualifying vessels accounted for 92% of 2014-2016 amounts for Alternative 2 to 83% for Alternative 5.

Table 5. Small-mesh multispecies fishery participation by qualifying and non-qualifying vessels for Alternatives 1 to 5.

Alternative	Category	Vessels	Vessels with trips > 2000 lbs. in 2014-2016	
1 (Section 4.1.2) 2008-2012*	Cat I	40	33	83%
	Cat II	74	38	51%
	Non-qualifiers	971	32	3%
	No History	1581	3	<1%
2 (Section 4.1.3) 2008-2012*	Cat I	20	19	95%
	Cat II	203	69	34%
	Non-qualifiers	908	7	1%
	No History	1581	3	<1%
3 (Section 4.1.4) 2008-2016	Cat I	51	44	86%
	Cat II	90	46	51%
	Non-qualifiers	1099	15	1%
4 (Section 4.1.5) 2000-2016	Cat I	55	42	76%
	Cat II	124	38	31%
	Non-qualifiers	2035	26	1%
5 (Section 4.1.6) 1996-2012*	Cat I	84	43	51%
	Cat II	159	30	19%
	Non-qualifiers	2345	32	1%
	No history	91	1	1%

For vessels that have recently entered the fishery or have insufficient landings to qualify, there are two choices – reduce fishing activity (a choice possibly dictated by other fishery regulations) or fish for other species. If the second choice is an option, the vessels are more likely to shift the

effort into fisheries that they have experience. The first choice reduces economic return (possibly recovered by more trips by qualifying vessels) and the second response increases catch in the alternative fisheries. The Impact Analysis in the draft document estimates the economic impact on non-qualifying vessels and assesses which alternative fisheries could be impacted. It should be noted that no matter which of the five alternatives are chosen, the economic impact is relatively small on the whole because non-qualifying vessels tend to fish less in the small-mesh multispecies fishery than do qualifying vessels.

There are a few vessels with a high number of whiting trips or high dependency on whiting revenue that would not qualify for a Category I or II limited access permit under the Amendment 22 alternatives. The table below summarizes fishing activity for these vessels by alternative. These may be vessels that began fishing for whiting and red hake after the 2012 control date, or vessels that made insufficient trips to have landings that exceed the respective qualification thresholds. Alternatives 1, 2, and 5 are will exclude the former set of vessels because they use the control date for qualification. Alternative 2 is more likely than others to qualify vessels with low amounts of whiting and red hake landings, due to the low qualification threshold.

Most vessels that would not qualify derive less than 10% of their revenue from landings of small-mesh multispecies (see table below). Three non-qualifying vessels in Alternative 1 earn more than 50% of revenue from small-mesh multispecies. There were none for Alternatives 2 and 3, and one vessel for Alternatives 4 and 5. Six or less vessels earn between 10 and 30% of their revenue from small-mesh multispecies for any of the five alternatives.

Table 6. Number of vessels that are not expected to qualify for a Category I or II permit, categorized by the proportion of revenue derived from landings of small-mesh multispecies during 2014-2016.

	0-10%	10-20%	20-30%	30-40%	40-50%	50-60%	60-70%	70-80%	80-90%	90-100%
Alternative 1	47	2	3	0	0	1	0	0	1	1
Alternative 2	10	1	1	0	0	0	0	0	0	0
Alternative 3	34	1	1	0	0	0	0	0	0	0
Alternative 4	38	2	2	1	0	0	0	0	0	1
Alternative 5	37	3	3	1	0	0	0	0	0	1

Table 6 and Table 7 summarize 2014-2016 fishing activity by vessels with permits that are likely to qualify under one of the five action alternatives in Amendment 22. In general, Category I qualifiers land the majority of whiting and make the most trips targeting whiting. Category II vessels are generally smaller and landing less whiting. Notably, Alternative 2 has lower amounts of whiting landings by Category I vessels but higher amounts by Category II vessels. Whiting landings during 2014-2016 by non-qualifying vessels totaled 3.7 to 5.4 million lbs. for all vessels, but less than two percent of the trips had whiting landings over 2000 lbs. Mostly these non-qualifying vessels participated in other fisheries than vessels that qualify for either Category I or II. Including only vessels that had one or more trips exceeding 2000 lbs. of whiting, the small-mesh multispecies landings for non-qualifying vessels are much lower, ranging from 67,576 lbs. for Alternative 3 to 1.79 million lbs. for Alternative 5 (Table 7). Non-qualifying vessels having one or more trips exceeding 2000 lbs. of whiting were 26 for Alternative 1, 10 for Alternative 2, 7 for Alternative 3, 17 for Alternative 4 And 24, for Alternative 5.

Table 8 to Table 11 summarize the 2014-2016 fishing activity by qualification category for the northern and southern areas, respectively. In general, the Category I and II vessels fishing in the northern area rely more heavily on landings of small-mesh multispecies than do qualifying vessels fishing in the southern area.

More Category I vessels fish for small-mesh multispecies in the southern area, regardless of the alternative. The percent of active Category I vessels fishing in the northern area ranges from 27 to 42%, with Alternatives 2 and 3 being the highest. In the southern area, the proportion of Category I vessels ranges from 94-98%, with Alternative 4 being the highest proportion of total active Category I vessels.

The higher proportion of Category II qualifiers also fish in the southern area. The proportion of active Category II vessels fishing in the northern area ranges from 5-46%, with Alternative 4 having the highest proportion. The proportion of Category II qualifiers in the southern area ranges from 77-87%, with Alternative 2 having the highest number of Category II qualifiers and the highest proportion fishing in the southern area.

Table 7. Expected number of qualifiers for a proposed Category I and II permit with 2014-2016 fishing activity for vessels with trips landing more than 2000 lbs. of whiting. All whiting and red hake landings (> 1 lb.) were considered to determine qualification. Vessels with no history or insufficient landings were grouped as “non-qualifiers”. “Whiting lbs. on Trips” includes only whiting landings that exceeded the applicable limit: 2,000; 15,000; or 30,000 lbs. and does not include landings of red hake.

Limited access category	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Category I					
Criteria, lbs.	500,000	1,000,000	500,000	500,000	1,000,000
Qualifying period	2008-2012	2008-2012	2008-2016	2000-2016	1996-2012
Permits	40	20	51	55	84
Vessels fishing (>2000 lbs. whiting)	33	19	44	41	42
Latent effort	7	1	7	14	42
Trip value, all species	\$ 93,692,579	\$ 73,927,609	\$ 103,577,578	\$ 103,582,157	\$ 100,636,337
Whiting value	\$ 24,791,261	\$ 23,325,208	\$ 26,431,598	\$ 25,685,305	\$ 25,572,585
Whiting, lbs.	33,196,804	30,934,696	35,688,153	34,347,037	34,141,420
Whiting, lbs. on Trips > 2,000 lbs.	26,744,851	25,717,715	28,458,419	27,539,234	27,460,294
Whiting, lbs. on Trips > 15,000 lbs.	10,488,651	10,483,651	10,732,551	10,617,331	10,617,331
Whiting, lbs. on Trips > 30,000 lbs.	2,339,868	2,339,868	2,339,868	2,339,868	2,339,868
Red hake value	\$ 1,001,798	\$ 787,398	\$ 1,089,689	\$ 1,028,693	\$ 1,004,925
Red hake, lbs.	2,087,313	1,451,525	2,321,464	2,141,222	2,071,937
Red hake, lbs. on Trips > 400 lbs.	1,107,625	716,255	1,236,436	1,125,406	1,084,276
Red hake, lbs. on Trips > 1,500 lbs.	311,185	159,280	356,285	318,285	310,285
Red hake, lbs. on Trips > 3,000 lbs.	82,523	34,428	88,323	82,523	81,523
Red hake trips > 400 lbs.	1,149	755	1,278	1,177	1,125
All trips	6,622	3,830	8,330	7,235	6,763
Whiting trips	4,067	2,672	4,891	4,406	4,268
Trips > 2000 lbs. (hake trips)	1,658	1,336	1,913	1,752	1,735
Trips > 15,000 lbs.	619	618	656	640	640
Trips > 30,000 lbs.	270	270	270	270	270
Category II					
Criteria, lbs.	100,000	20,000	100,000	100,000	200,000
Permits	74	69	90	124	159
Vessels fishing (>2000 lbs. whiting)	38	68	46	39	31
Latent effort	36	1	44	85	128
Trip value, all species	\$ 29,640,257	57,972,485	30,609,634	28,757,665	26,802,736
Whiting value	\$ 2,559,993	4,426,151	2,053,833	2,370,756	1,735,719
Whiting, lbs.	3,944,874	6,857,865	3,129,410	3,717,712	2,948,810
Whiting, lbs. on Trips > 2,000 lbs.	2,336,187	3,555,867	1,463,212	2,045,265	1,544,691
Whiting, lbs. on Trips > 15,000 lbs.	322,900	327,900	134,500	247,220	194,220
Whiting, lbs. on Trips > 30,000 lbs.	20,000	20,000	20,000	20,000	20,000
Red hake value	\$ 183,338.00	437,670	173,146	190,530	195,496
Red hake, lbs.	492,132	1,243,094	484,027	544,330	555,925
Red hake, lbs. on Trips > 400 lbs.	244,334	691,028	228,452	280,394	298,634
Red hake, lbs. on Trips > 1,500 lbs.	76,375	238,181	50,686	78,476	84,176
Red hake, lbs. on Trips > 3,000 lbs.	13,000	61,095	9,660	13,000	14,000
Red hake trips > 400 lbs.	305	767	335	347	352
All trips	4,687	9,054	5,151	4,878	4,627
Whiting trips	2,159	4,126	2,169	2,281	2,054
Trips > 2000 lbs.	454	890	463	488	377
Trips > 15,000 lbs.	43	44	15	30	22
Trips > 30,000 lbs.	Confidential	Confidential	Confidential	Confidential	Confidential
Non-qualifiers					
Permits	2,552	2489	1099	2035	2345
Vessels fishing (>2000 lbs. whiting)	26	10	7	17	24
Trip value, all species	\$ 14,088,581	5521323	3234205	5081595	9982344
Whiting value	\$ 1,182,831	782726.99	48654.04	478025	1225782.05
Whiting, lbs.	1,743,461	1,092,578	67,576	820,390	1,794,909
Whiting, lbs. on Trips > 2,000 lbs.	850,631	658,087	10,038	347,170	926,684
Whiting, lbs. on Trips > 15K lbs.	55,500	55,500	-	2,500	55,500
Whiting, lbs. on Trips > 30k lbs.	-	-	-	-	-
Red hake value	\$ 79,973	\$ 40,042	\$ 2,274	\$ 45,886	\$ 64,689
Red hake, lbs.	231,227	116,053	5,181	125,120	182,810
Red hake, lbs. on Trips > 400 lbs.	113,779	58,455	850	59,938	82,828
Red hake, lbs. on Trips > 1,500 lbs.	19,411	9,510	-	10,210	12,510
Red hake, lbs. on Trips > 3000 lbs.	2,460	2,460	-	2,460	2,460
Red hake trips > 400 lbs.	161	93	2	91	138
All trips	2,535	960	363	1,731	2,454
Whiting trips	943	371	109	482	847
Trips > 2000 lbs.	274	160	10	146	274
Trips > 15,000 lbs.	9	9	-	1	9
Trips > 30,000 lbs.	-	-	-	-	-

Table 8. Qualification summaries with 2014-2016 fishing activity data presented as a proportion of the total for vessels with trips landing more than 2000 lbs. of whiting.

Limited access category	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Category I					
Criteria, lbs.	500,000	1,000,000	500,000	500,000	1,000,000
Qualifying period	2008-2012	2008-2012	2008-2016	2000-2016	1996-2012
Permits	40	20	51	55	84
Vessels fishing (>2000 lbs. whiting)	33	19	44	41	42
Latent effort	7	1	7	14	42
Trip value, all species	\$93,692,579	\$73,927,609	\$103,577,578	\$103,582,157	\$100,636,337
Whiting value	26%	32%	26%	25%	25%
Whiting, lbs.	33,196,804	30,934,696	35,688,153	34,347,037	34,141,420
Whiting, lbs. on Trips > 2,000 lbs.	81%	83%	80%	80%	80%
Whiting, lbs. on Trips > 15,000 lbs.	32%	34%	30%	31%	31%
Whiting, lbs. on Trips > 30,000 lbs.					
Red hake value	\$1,001,798	\$787,398	\$1,089,689	\$1,028,693	\$1,004,925
Red hake, lbs.	2,087,313	1,451,525	2,321,464	2,141,222	2,071,937
Red hake, lbs. on Trips > 400 lbs.	53%	49%	53%	53%	52%
Red hake, lbs. on Trips > 1,500 lbs.	15%	11%	15%	15%	15%
Red hake, lbs. on Trips > 3,000 lbs.	4%	2%	4%	4%	4%
Red hake trips > 400 lbs.	1,149	755	1,278	1,177	1,125
All trips	6,622	3,830	8,330	7,235	6,763
Whiting trips	61%	70%	59%	61%	63%
Trips > 2000 lbs. (hake trips)	41%	50%	39%	40%	41%
Trips > 15,000 lbs.	15%	23%	13%	15%	15%
Trips > 30,000 lbs.	7%	10%	6%	6%	6%
Category II					
Criteria, lbs.	100,000	20,000	100,000	100,000	200,000
Permits	74	69	90	124	159
Vessels fishing (>2000 lbs. whiting)	38	68	46	39	31
Latent effort	36	1	44	85	128
Trip value, all species	\$29,640,257	\$57,972,485	\$30,609,634	\$28,757,665	\$26,802,736
Whiting value	9%	8%	7%	8%	6%
Whiting, lbs.	3,944,874	6,857,865	3,129,410	3,717,712	2,948,810
Whiting, lbs. on Trips > 2,000 lbs.	59%	52%	47%	55%	52%
Whiting, lbs. on Trips > 15,000 lbs.	8%	5%	4%	7%	7%
Whiting, lbs. on Trips > 30,000 lbs.					
Red hake value	\$183,338	\$437,670	\$173,146	\$190,530	\$195,496
Red hake, lbs.	492,132	1,243,094	484,027	544,330	555,925
Red hake, lbs. on Trips > 400 lbs.	50%	56%	47%	52%	54%
Red hake, lbs. on Trips > 1,500 lbs.	16%	19%	10%	14%	15%
Red hake, lbs. on Trips > 3,000 lbs.	3%	5%	2%	2%	3%
Red hake trips > 400 lbs.	305	767	335	347	352
All trips	4,687	9,054	5,151	4,878	4,627
Whiting trips	46%	46%	42%	47%	44%
Trips > 2000 lbs.	21%	22%	21%	21%	18%
Trips > 15,000 lbs.	2%	1%	1%	1%	1%
Trips > 30,000 lbs.					
Non-qualifiers					
Permits	\$2,552	\$2,489	\$1,099	\$2,035	\$2,345
Vessels fishing (>2000 lbs. whiting)	26	10	7	17	24
Trip value, all species	\$14,088,581	\$5,521,323	\$3,234,205	\$5,081,595	\$9,982,344
Whiting value	8%	14%	2%	9%	12%
Whiting, lbs.	1,743,461	1,092,578	67,576	820,390	1,794,909
Whiting, lbs. on Trips > 2,000 lbs.	49%	60%	15%	42%	52%
Whiting, lbs. on Trips > 15K lbs.	3%	5%	0%	0%	3%
Whiting, lbs. on Trips > 30k lbs.					
Red hake value	\$79,973	\$40,042	\$2,274	\$45,886	\$64,689
Red hake, lbs.	231,227	116,053	5,181	125,120	182,810
Red hake, lbs. on Trips > 400 lbs.	49%	50%	16%	48%	45%
Red hake, lbs. on Trips > 1,500 lbs.	8%	8%	0%	8%	7%
Red hake, lbs. on Trips > 3000 lbs.	1%	2%	0%	2%	1%
Red hake trips > 400 lbs.	161	93	2	91	138
All trips	2,535	960	363	1,731	2,454
Whiting trips	37%	39%	30%	28%	35%
Trips > 2000 lbs.	29%	43%	9%	30%	32%
Trips > 15,000 lbs.	1%	2%	0%	0%	1%
Trips > 30,000 lbs.					

Table 9. Expected number of qualifiers for a proposed Category I and II permit with 2014-2016 fishing activity for **NORTHERN AREA** vessels with trips landing more than 2000 lbs. of whiting. All whiting and red hake landings (> 1 lb.) were considered to determine qualification. Vessels with no history or insufficient landings were grouped as “non-qualifiers”. “Whiting lbs. on Trips” includes only whiting landings that exceeded the applicable limit: 2,000; 15,000; or 30,000 lbs. and does not include landings of red hake.

Limited access category	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Category I					
Criteria, lbs.	500,000	1,000,000	500,000	500,000	1,000,000
Qualifying period	2008-2012	2008-2012	2008-2016	2000-2016	1996-2012
Permits	40	20	51	55	84
Vessels fishing (>2000 lbs. whiting)	9	8	16	12	13
Latent effort	NA	NA	NA	NA	NA
Trip value, all species	\$ 14,044,030	\$ 13,487,819	\$ 16,780,533	\$ 15,262,396	\$ 16,072,211
Whiting value	\$ 7,807,137	\$ 7,684,849	\$ 9,129,519	\$ 8,399,117	\$ 8,409,963
Whiting, lbs.	10,935,537	10,598,992	12,945,718	11,624,319	11,637,625
Whiting, lbs. on Trips > 2,000 lbs.	9,376,715	9,171,985	10,922,931	9,992,469	9,995,684
Whiting, lbs. on Trips > 15,000 lbs.	3,168,745	3,168,745	3,412,645	3,293,425	3,293,425
Whiting, lbs. on Trips > 30,000 lbs.	Confidential	19,000	19,000	19,000	19,000
Red hake value	\$ 171,066	\$ 160,277	\$ 205,863	\$ 171,633	\$ 171,633
Red hake, lbs.	399,358	350,153	474,373	384,858	384,858
Red hake, lbs. on Trips > 400 lbs.	183,965	153,185	221,605	175,385	175,385
Red hake, lbs. on Trips > 1,500 lbs	29,800	24,100	42,500	32,900	32,900
Red hake, lbs. on Trips > 3,000 lbs	1,000	1,000	1,000	1,000	1,000
Red hake trips > 400 lbs.	195	160	227	173	173
All trips	1,064	836	1,484	996	1,030
Whiting trips	880	786	1,119	897	918
Trips > 2000 lbs. (hake trips)	517	460	697	539	540
Trips > 15,000 lbs.	232	232	269	252	252
Trips > 30,000 lbs.	Confidential	Confidential	Confidential	Confidential	Confidential
Category II					
Criteria, lbs.	100,000	20,000	100,000	100,000	200,000
Permits					
Vessels fishing (>2000 lbs. whiting)	16	24	19	18	12
Latent effort	NA	NA	NA	NA	NA
Trip value, all species	\$ 3,935,622	5,716,819	4,403,859	5,985,967	3,024,196
Whiting value	\$ 1,594,025	1,841,688	953,394	1,458,012	801,727
Whiting, lbs.	2,400,216	2,990,324	1,402,085	2,261,815	1,457,553
Whiting, lbs. on Trips > 2,000 lbs.	1,706,695	2,004,650	751,216	1,464,721	966,432
Whiting, lbs. on Trips > 15,000 lbs.	243,900	243,900	48,000	167,220	119,220
Whiting, lbs. on Trips > 30,000 lbs.	-	-	-	-	-
Red hake value	\$ 44,247.61	65,753	34,629	48,704	41,079
Red hake, lbs.	97,576	201,296	121,661	143,661	124,711
Red hake, lbs. on Trips > 400 lbs.	43,230	108,660	61,085	74,160	68,770
Red hake, lbs. on Trips > 1,500 lbs	12,700	24,800	8,500	13,500	13,500
Red hake, lbs. on Trips > 3,000 lbs	-	-	-	-	-
Red hake trips > 400 lbs.	51	119	87	95	78
All trips	943	1,607	1,326	1,073	783
Whiting trips	451	730	534	568	376
Trips > 2000 lbs.	237	344	216	284	182
Trips > 15,000 lbs.	37	37	7	24	17
Trips > 30,000 lbs.	-	-	-	-	-
Non-qualifiers					
Permits					
Vessels fishing (>2000 lbs. whiting)	14	7	4	9	14
Trip value, all species	\$ 4,943,465	3718479	1738725	1674754	3826710
Whiting value	\$ 699,994	574619.16	18243.61	244026.59	889465.95
Whiting, lbs.	1,037,364	783,801	25,314	486,983	1,277,939
Whiting, lbs. on Trips > 2,000 lbs.	595,312	502,087	4,575	221,532	716,606
Whiting, lbs. on Trips > 15K lbs.	48,000	48,000	-	-	48,000
Whiting, lbs. on Trips > 30k lbs.	-	-	-	-	-
Red hake value	\$ 25,263	\$ 14,547	\$ 84	\$ 20,239	\$ 27,864
Red hake, lbs.	99,405	44,890	305	67,820	86,770
Red hake, lbs. on Trips > 400 lbs.	55,495	20,845	-	33,145	38,535
Red hake, lbs. on Trips > 1,500 lbs	8,500	2,100	-	4,600	4,600
Red hake, lbs. on Trips > 3000 lbs.	-	-	-	-	-
Red hake trips > 400 lbs.	68	35	-	46	63
All trips	918	482	115	856	1,112
Whiting trips	375	190	53	241	412
Trips > 2000 lbs.	162	112	3	93	194
Trips > 15,000 lbs.	7	7	-	-	7
Trips > 30,000 lbs.	-	-	-	-	-

Table 10. Qualification summaries with 2014-2016 **NORTHERN AREA** fishing activity data presented as a proportion of the total for vessels with trips landing more than 2000 lbs. of whiting.

Limited access category	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Category I					
Criteria, lbs.	500,000	1,000,000	500,000	500,000	1,000,000
Qualifying period	2008-2012	2008-2012	2008-2016	2000-2016	1996-2012
Permits	40	20	51	55	84
Vessels fishing (>2000 lbs. whiting)	9	8	16	12	13
Latent effort	NA	NA	NA	NA	NA
Trip value, all species	\$14,044,030	\$13,487,819	\$16,780,533	\$15,262,396	\$16,072,211
Whiting value	56%	57%	54%	55%	52%
Whiting, lbs.	10,935,537	10,598,992	12,945,718	11,624,319	11,637,625
Whiting, lbs. on Trips > 2,000 lbs.	86%	87%	84%	86%	86%
Whiting, lbs. on Trips > 15,000 lbs.	29%	30%	26%	28%	28%
Whiting, lbs. on Trips > 30,000 lbs.					
Red hake value	\$171,066	\$160,277	\$205,863	\$171,633	\$171,633
Red hake, lbs.	399,358	350,153	474,373	384,858	384,858
Red hake, lbs. on Trips > 400 lbs.	46%	44%	47%	46%	46%
Red hake, lbs. on Trips > 1,500 lbs.	7%	7%	9%	9%	9%
Red hake, lbs. on Trips > 3,000 lbs.	0%	0%	0%	0%	0%
Red hake trips > 400 lbs.	195	160	227	173	173
All trips	1,064	836	1,484	996	1,030
Whiting trips	83%	94%	75%	90%	89%
Trips > 2000 lbs. (hake trips)	59%	59%	62%	60%	59%
Trips > 15,000 lbs.	26%	30%	24%	28%	27%
Trips > 30,000 lbs.					
Category II					
Criteria, lbs.	100,000	20,000	100,000	100,000	200,000
Permits					
Vessels fishing (>2000 lbs. whiting)	16	24	19	18	12
Latent effort	NA	NA	NA	NA	NA
Trip value, all species	\$3,935,622	\$5,716,819	\$4,403,859	\$5,985,967	\$3,024,196
Whiting value	41%	32%	22%	24%	27%
Whiting, lbs.	2,400,216	2,990,324	1,402,085	2,261,815	1,457,553
Whiting, lbs. on Trips > 2,000 lbs.	71%	67%	54%	65%	66%
Whiting, lbs. on Trips > 15,000 lbs.	10%	8%	3%	7%	8%
Whiting, lbs. on Trips > 30,000 lbs.					
Red hake value	\$44,248	\$65,753	\$34,629	\$48,704	\$41,079
Red hake, lbs.	97,576	201,296	121,661	143,661	124,711
Red hake, lbs. on Trips > 400 lbs.	44%	54%	50%	52%	55%
Red hake, lbs. on Trips > 1,500 lbs.	13%	12%	7%	9%	11%
Red hake, lbs. on Trips > 3,000 lbs.	0%	0%	0%	0%	0%
Red hake trips > 400 lbs.	51	119	87	95	78
All trips	943	1,607	1,326	1,073	783
Whiting trips	48%	45%	40%	53%	48%
Trips > 2000 lbs.	53%	47%	40%	50%	48%
Trips > 15,000 lbs.	8%	5%	1%	4%	5%
Trips > 30,000 lbs.					
Non-qualifiers					
Permits					
Vessels fishing (>2000 lbs. whiting)	14	7	4	9	14
Trip value, all species	\$4,943,465	\$3,718,479	\$1,738,725	\$1,674,754	\$3,826,710
Whiting value	14%	15%	1%	15%	23%
Whiting, lbs.	1,037,364	783,801	25,314	486,983	1,277,939
Whiting, lbs. on Trips > 2,000 lbs.	57%	64%	18%	45%	56%
Whiting, lbs. on Trips > 15K lbs.	5%	6%	0%	0%	4%
Whiting, lbs. on Trips > 30k lbs.					
Red hake value	\$25,263	\$14,547	\$84	\$20,239	\$27,864
Red hake, lbs.	99,405	44,890	305	67,820	86,770
Red hake, lbs. on Trips > 400 lbs.	56%	46%	0%	49%	44%
Red hake, lbs. on Trips > 1,500 lbs.	9%	5%	0%	7%	5%
Red hake, lbs. on Trips > 3000 lbs.	0%	0%	0%	0%	0%
Red hake trips > 400 lbs.	68	35	0	46	63
All trips	918	482	115	856	1,112
Whiting trips	41%	39%	46%	28%	37%
Trips > 2000 lbs.	43%	59%	6%	39%	47%
Trips > 15,000 lbs.	2%	4%	0%	0%	2%
Trips > 30,000 lbs.					

Table 11. Expected number of qualifiers for a proposed Category I and II permit with 2014-2016 fishing activity for **SOUTHERN AREA** vessels with trips landing more than 2000 lbs. of whiting. All whiting and red hake landings (> 1 lb.) were considered to determine qualification. Vessels with no history or insufficient landings were grouped as “non-qualifiers”. “Whiting lbs. on Trips” includes only whiting landings that exceeded the applicable limit: 2,000; 15,000; or 30,000 lbs. and does not include landings of red hake.

Limited access category	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Category I					
Criteria, lbs.	500,000	1,000,000	500,000	500,000	1,000,000
Qualifying period	2008-2012	2008-2012	2008-2016	2000-2016	1996-2012
Permits	40	20	51	55	84
Vessels fishing (>2000 lbs. whiting)	31	18	41	40	40
Latent effort	NA	NA	NA	NA	NA
Trip value, all species	\$ 79,648,549	\$ 60,439,790	\$ 86,797,045	\$ 88,319,761	\$ 84,564,126
Whiting value	\$ 16,984,125	\$ 15,640,359	\$ 17,302,080	\$ 17,286,188	\$ 17,162,621
Whiting, lbs.	22,261,267	20,335,704	22,742,435	22,722,718	22,503,795
Whiting, lbs. on Trips > 2,000 lbs.	17,368,136	16,545,730	17,535,488	17,546,765	17,464,610
Whiting, lbs. on Trips > 15,000 lbs.	7,319,906	7,314,906	7,319,906	7,323,906	7,323,906
Whiting, lbs. on Trips > 30,000 lbs.	2,320,868	2,320,868	2,320,868	2,320,868	2,320,868
Red hake value	\$ 830,733	\$ 627,122	\$ 883,826	\$ 857,060	\$ 833,291
Red hake, lbs.	1,687,955	1,101,372	1,847,091	1,756,364	1,687,079
Red hake, lbs. on Trips > 400 lbs.	923,660	563,070	1,014,831	950,021	908,891
Red hake, lbs. on Trips > 1,500 lbs	281,385	135,180	313,785	285,385	277,385
Red hake, lbs. on Trips > 3,000 lbs	81,523	33,428	87,323	81,523	80,523
Red hake trips > 400 lbs.	954	595	1,051	1,004	952
All trips	5,558	2,994	6,846	6,239	5,733
Whiting trips	3,187	1,886	3,772	3,509	3,350
Trips > 2000 lbs. (hake trips)	1,141	876	1,216	1,213	1,195
Trips > 15,000 lbs.	387	386	387	388	388
Trips > 30,000 lbs.	268	268	268	268	268
Category II					
Criteria, lbs.	100,000	20,000	100,000	100,000	200,000
Permits					
Vessels fishing (>2000 lbs. whiting)	32	59	37	30	25
Latent effort	NA	NA	NA	NA	NA
Trip value, all species	\$ 25,704,635	52,255,666	26,205,775	22,771,698	23,778,540
Whiting value	\$ 965,968	2,584,463	1,100,440	912,744	933,992
Whiting, lbs.	1,544,658	3,867,541	1,727,325	1,455,897	1,491,257
Whiting, lbs. on Trips > 2,000 lbs.	629,492	1,551,217	711,996	580,544	578,259
Whiting, lbs. on Trips > 15,000 lbs.	79,000	84,000	86,500	80,000	75,000
Whiting, lbs. on Trips > 30,000 lbs.	20,000	20,000	20,000	20,000	20,000
Red hake value	\$ 139,090.39	371,917	138,518	141,826	154,417
Red hake, lbs.	394,556	1,041,798	362,366	400,669	431,214
Red hake, lbs. on Trips > 400 lbs.	201,104	582,368	167,367	206,234	229,864
Red hake, lbs. on Trips > 1,500 lbs	63,675	213,381	42,186	64,976	70,676
Red hake, lbs. on Trips > 3,000 lbs	13,000	61,095	9,660	13,000	14,000
Red hake trips > 400 lbs.	254	648	248	252	274
All trips	3,744	7,447	3,825	3,805	3,844
Whiting trips	1,708	3,396	1,635	1,713	1,678
Trips > 2000 lbs.	217	546	247	204	195
Trips > 15,000 lbs.	6	7	8	6	5
Trips > 30,000 lbs.	Confidential	Confidential	Confidential	Confidential	Confidential
Non-qualifiers					
Permits					
Vessels fishing (>2000 lbs. whiting)	19	5	4	12	17
Trip value, all species	\$ 9,145,116	1802844	1495480	3406841	6155634
Whiting value	\$ 482,837	208107.83	30410.43	233998.41	336316.1
Whiting, lbs.	706,097	308,777	42,262	333,407	516,970
Whiting, lbs. on Trips > 2,000 lbs.	255,319	156,000	5,463	125,638	210,078
Whiting, lbs. on Trips > 15K lbs.	7,500	7,500	-	2,500	7,500
Whiting, lbs. on Trips > 30k lbs.	-	-	-	-	-
Red hake value	\$ 54,710	\$ 25,495	\$ 2,190	\$ 25,647	\$ 36,825
Red hake, lbs.	131,822	71,163	4,876	57,300	96,040
Red hake, lbs. on Trips > 400 lbs.	58,284	37,610	850	26,793	44,293
Red hake, lbs. on Trips > 1,500 lbs	10,911	7,410	-	5,610	7,910
Red hake, lbs. on Trips > 3000 lbs.	2,460	2,460	-	2,460	2,460
Red hake trips > 400 lbs.	93	58	2	45	75
All trips	1,617	478	248	875	1,342
Whiting trips	568	181	56	241	435
Trips > 2000 lbs.	112	48	7	53	80
Trips > 15,000 lbs.	2	2	-	1	2
Trips > 30,000 lbs.	-	-	-	-	-

Table 12. Qualification summaries with 2014-2016 **SOUTHERN AREA** fishing activity data presented as a proportion of the total for vessels with trips landing more than 2000 lbs. of whiting.

Limited access category	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Category I					
Criteria, lbs.	500,000	1,000,000	500,000	500,000	1,000,000
Qualifying period	2008-2012	2008-2012	2008-2016	2000-2016	1996-2012
Permits	40	20	51	55	84
Vessels fishing (>2000 lbs. whiting)	31	18	41	40	40
Latent effort	NA	NA	NA	NA	NA
Trip value, all species	\$79,648,549	\$60,439,790	\$86,797,045	\$88,319,761	\$84,564,126
Whiting value	21%	26%	20%	20%	20%
Whiting, lbs.	22,261,267	20,335,704	22,742,435	22,722,718	22,503,795
Whiting, lbs. on Trips > 2,000 lbs.	78%	81%	77%	77%	78%
Whiting, lbs. on Trips > 15,000 lbs.	33%	36%	32%	32%	33%
Whiting, lbs. on Trips > 30,000 lbs.					
Red hake value	\$830,733	\$627,122	\$883,826	\$857,060	\$833,291
Red hake, lbs.	1,687,955	1,101,372	1,847,091	1,756,364	1,687,079
Red hake, lbs. on Trips > 400 lbs.	55%	51%	55%	54%	54%
Red hake, lbs. on Trips > 1,500 lbs.	17%	12%	17%	16%	16%
Red hake, lbs. on Trips > 3,000 lbs.	5%	3%	5%	5%	5%
Red hake trips > 400 lbs.	954	595	1,051	1,004	952
All trips	5,558	2,994	6,846	6,239	5,733
Whiting trips	57%	63%	55%	56%	58%
Trips > 2000 lbs. (hake trips)	36%	46%	32%	35%	36%
Trips > 15,000 lbs.	12%	20%	10%	11%	12%
Trips > 30,000 lbs.	8%	14%	7%	8%	8%
Category II					
Criteria, lbs.	100,000	20,000	100,000	100,000	200,000
Permits					
Vessels fishing (>2000 lbs. whiting)	32	59	37	30	25
Latent effort	NA	NA	NA	NA	NA
Trip value, all species	\$25,704,635	\$52,255,666	\$26,205,775	\$22,771,698	\$23,778,540
Whiting value	4%	5%	4%	4%	4%
Whiting, lbs.	1,544,658	3,867,541	1,727,325	1,455,897	1,491,257
Whiting, lbs. on Trips > 2,000 lbs.	41%	40%	41%	40%	39%
Whiting, lbs. on Trips > 15,000 lbs.	5%	2%	5%	5%	5%
Whiting, lbs. on Trips > 30,000 lbs.					
Red hake value	\$139,090	\$371,917	\$138,518	\$141,826	\$154,417
Red hake, lbs.	394,556	1,041,798	362,366	400,669	431,214
Red hake, lbs. on Trips > 400 lbs.	51%	56%	46%	51%	53%
Red hake, lbs. on Trips > 1,500 lbs.	16%	20%	12%	16%	16%
Red hake, lbs. on Trips > 3,000 lbs.	3%	6%	3%	3%	3%
Red hake trips > 400 lbs.	254	648	248	252	274
All trips	3,744	7,447	3,825	3,805	3,844
Whiting trips	46%	46%	43%	45%	44%
Trips > 2000 lbs.	13%	16%	15%	12%	12%
Trips > 15,000 lbs.	0%	0%	0%	0%	0%
Trips > 30,000 lbs.					
Non-qualifiers					
Permits					
Vessels fishing (>2000 lbs. whiting)	19	5	4	12	17
Trip value, all species	\$9,145,116	\$1,802,844	\$1,495,480	\$3,406,841	\$6,155,634
Whiting value	5%	12%	2%	7%	5%
Whiting, lbs.	706,097	308,777	42,262	333,407	516,970
Whiting, lbs. on Trips > 2,000 lbs.	36%	51%	13%	38%	41%
Whiting, lbs. on Trips > 15K lbs.	1%	2%	0%	1%	1%
Whiting, lbs. on Trips > 30k lbs.					
Red hake value	\$54,710	\$25,495	\$2,190	\$25,647	\$36,825
Red hake, lbs.	131,822	71,163	4,876	57,300	96,040
Red hake, lbs. on Trips > 400 lbs.	44%	53%	17%	47%	46%
Red hake, lbs. on Trips > 1,500 lbs.	8%	10%	0%	10%	8%
Red hake, lbs. on Trips > 3000 lbs.	2%	3%	0%	4%	3%
Red hake trips > 400 lbs.	93	58	2	45	75
All trips	1,617	478	248	875	1,342
Whiting trips	35%	38%	23%	28%	32%
Trips > 2000 lbs.	20%	27%	13%	22%	18%
Trips > 15,000 lbs.	0%	1%	0%	0%	0%
Trips > 30,000 lbs.					

Vessels that would qualify for a Category I permit tend to be larger vessels (132 to 190 GRT), taking a greater proportion of trips targeting small-mesh multispecies (26-39%), and have a greater economic dependence on the small-mesh multispecies fishery (28-38%) during 2014-2016 than Category II or non-qualifying vessels (Table 12). The annual revenue from small-mesh multispecies ranges from \$207 (Alternative 5) to \$419 thousand (Alternative 2) per year. Alternative 2 with the highest qualification threshold qualifies the lowest number of vessels, but these vessels are more focused on the small-mesh multispecies fishery than the Category I vessels in the other four alternatives. Dependence on small-mesh multispecies revenue ranged from 28% (Alternative 4 and 5) to 38% (Alternative 2). Many of these vessels also use small-mesh trawls to target squids. The whiting revenue when more than 2000 lbs. of whiting are landed averaged \$12,455 (Alternative 3) to \$15,997 per trip (Alternative 2).

Vessels that would qualify for a Category II permit tend to be smaller vessels (65-71 GRT) than those that qualify for Category I, taking a smaller proportion of trips targeting small-mesh multispecies (10-12%), and have a lower economic dependence on the small-mesh multispecies fishery (6-9%) during 2014-2016 than Category II or non-qualifying vessels (Table 12). The annual revenue from small-mesh multispecies ranges from \$19 (Alternative 3) to \$29 thousand (Alternative 2) per year. Alternative 2 with the lowest qualification threshold qualifies the most number of vessels, many of which were making small-mesh multispecies trips in 2014-2016, but would not qualify with the other alternatives. Dependence on small-mesh multispecies revenue ranged from 6% (Alternative 3) to 9% (Alternative 2). Many of these vessels also use small-mesh trawls to target squids, large-mesh trawls targeting groundfish, monkfish, and skates, or gillnets targeting groundfish. The whiting revenue when more than 2000 lbs. of whiting are landed averaged \$3,435 (Alternative 3) to \$4,675 per trip (Alternative 1).

Many more vessels that landed one or more lbs. of small-mesh multispecies had no history during an alternative's qualification period, or did not have landings exceeding the threshold. The number of MRI/permits that did not qualify varied with the different qualification periods for each alternative (Table 12), but the number of non-qualifying vessels having one or more trips above the incidental whiting and red hake limits ranged from 25 (Alternative 2) to 48 (Alternative 4), almost the same number of vessels that would qualify for a Category II permit. Non-qualifying vessels tend to be somewhat smaller (33-49 GRT) than vessels that would qualify for a Category II permit, but have much higher total revenue derived from other fisheries targeting other species (95-98%). The average whiting landings per trip ranged from 234 (Alternative 3) to 324 (Alternative 2) lbs./trip, contributing revenue of \$170 (Alternative 3) to \$235 (Alternative 2) per trip. If we only consider trips that landed over 2000 lbs. of whiting or 400 lbs. of red hake, the revenue from whiting landings jumps to \$4,682 (Alternative 1) to \$5,777 (Alternative 3) per trip, actually a little higher than the average revenue per trip for vessels that would qualify for a Category II permit (\$3,435-\$4,675).

Table 13. Combined area summary of 2014-2016 fishing activity by vessels making one or more trips >= 2000 lbs. of whiting.

Alts.	Qual. Cat.	Avg. GRT	Qualifying fleet histories	Vessels w/ trips >= 2000 lbs. whiting	Latent Effort	Trips > 2000 lbs.	Share whiting trips (%)*	Ratio whiting/fish trips	Percent whiting trips > 2000 lbs.	Annual average whiting, lbs.	Share of whiting landings (%)*	Ratio whiting/fish values	Annual fish revenue per boat	Annual SMS revenue per boat	Whiting lbs./trip on trips >2000 lbs.	Whiting revenue per trip on trips >2000 lbs.	Annual fleet SMS revenue
1	I	151	40	33	18%	1658	69%	0.61	41%	11,065,601	85%	0.26	\$946,390	\$260,536	18,131	\$13,540	\$8,597,687
2	I	190	20	19	5%	1336	56%	0.70	50%	10,311,565	80%	0.32	\$1,296,976	\$423,028	21,250	\$16,023	\$8,037,535
3	I	132	51	44	14%	1913	80%	0.59	39%	11,896,051	92%	0.26	\$784,679	\$208,495	16,876	\$12,499	\$9,173,762
4	I	143	55	41	25%	1752	73%	0.61	40%	11,449,012	88%	0.25	\$842,131	\$217,187	17,719	\$13,250	\$8,904,666
5	I	139	84	43	49%	1752	73%	0.63	41%	11,380,473	88%	0.25	\$798,701	\$210,933	17,827	\$13,353	\$8,859,170
1	II	66	74	38	49%	454	19%	0.46	21%	1,314,958	10%	0.09	\$260,002	\$24,064	7,146	\$4,637	\$914,444
2	II	71	203	83	59%	890	37%	0.46	22%	2,285,955	18%	0.08	\$284,179	\$23,842	5,995	\$3,869	\$1,621,273
3	II	65	90	56	38%	463	19%	0.42	21%	1,043,137	8%	0.07	\$221,809	\$16,138	5,160	\$3,387	\$742,327
4	II	65	124	48	61%	488	20%	0.47	21%	1,239,237	10%	0.08	\$245,792	\$21,891	6,191	\$3,948	\$853,762
5	II	68	159	37	77%	377	16%	0.44	18%	982,937	8%	0.06	\$288,201	\$20,766	6,097	\$3,589	\$643,738
1	NQ	43	971	26	NA	274	11%	0.37	08%	581,154	4%	0.08	\$180,623	\$15,164	5,104	\$3,463	\$394,277
2	NQ	33	908	12	NA	160	7%	0.39	14%	364,193	3%	0.14	\$184,044	\$26,091	6,113	\$4,379	\$260,909
3	NQ	49	1,099	8	NA	10	0.42%	0.30	02%	22,525	0.17%	0.02	\$154,010	\$2,317	3,004	\$2,163	\$16,218
4	NQ	45	2,035	21	NA	146	6%	0.28	09%	273,463	2%	0.09	\$99,639	\$9,373	4,378	\$2,551	\$159,342
5	NQ	40	2,341	31	NA	274	11%	0.35	12%	598,303	5%	0.12	\$138,644	\$17,025	5,382	\$3,676	\$408,594

Note: * Share of whiting trips (%) and share of whiting landings (%) are computed from corresponding total trips or landings in an alternative.

Table 14. Northern area summary of 2014-2016 fishing activity by vessels making one or more trips >= 2000 lbs. of whiting.

Alts.	Qual. Cat.	Avg. GRT	Qualifying fleet histories	Vessels w/ trips >= 2000 lbs. whiting	Latent Effort	Trips > 2000 lbs.	Share whiting trips (%)*	Ratio whiting/fish trips	Percent whiting trips > 2000 lbs.	Annual average whiting, lbs.	Share of whiting landings (%)*	Ratio whiting/fish values	Annual fish revenue per boat	Annual SMS revenue per boat	Whiting lbs./trip on trips >2000 lbs.	Whiting revenue per trip on trips >2000 lbs.	Annual fleet SMS revenue
1	I	151	40	33	18%	517	46%	0.83	59%	3,645,179	76%	0.56	\$520,149	\$295,489	20,137	\$14,376	\$2,659,401
2	I	190	20	19	5%	460	35%	0.94	59%	3,532,997	72%	0.57	\$561,992	\$326,880	21,939	\$15,907	\$2,615,042
3	I	132	51	44	14%	697	56%	0.75	62%	4,315,239	86%	0.54	\$349,594	\$194,487	17,671	\$12,462	\$3,111,794
4	I	143	55	41	25%	539	45%	0.90	60%	3,874,773	84%	0.55	\$423,955	\$238,076	20,539	\$14,840	\$2,856,917
5	I	139	84	43	49%	540	49%	0.89	59%	3,879,208	86%	0.52	\$412,108	\$220,041	20,511	\$14,822	\$2,860,532
1	II	66	74	38	49%	451	40%	0.48	53%	800,072	17%	0.41	\$81,992	\$34,131	9,201	\$6,111	\$546,091
2	II	71	203	83	59%	730	56%	0.45	47%	996,775	20%	0.32	\$79,400	\$26,492	7,827	\$4,821	\$635,813
3	II	65	90	56	38%	534	43%	0.40	40%	467,362	9%	0.22	\$77,261	\$17,334	5,478	\$3,725	\$329,341
4	II	65	124	48	61%	568	47%	0.53	50%	753,938	16%	0.24	\$110,851	\$27,902	7,157	\$4,614	\$502,239
5	II	68	159	37	77%	376	34%	0.48	48%	485,851	11%	0.27	\$84,005	\$23,411	7,310	\$4,021	\$280,935
1	NQ	43	971	26	NA	162	14%	0.41	43%	345,788	7%	0.14	\$117,702	\$16,667	5,675	\$3,829	\$233,331
2	NQ	33	908	12	NA	112	9%	0.39	59%	261,267	5%	0.15	\$177,070	\$27,363	6,483	\$4,753	\$191,540
3	NQ	49	1,099	8	NA	3	0.24%	0.46	6%	8,438	0.17%	0.01	\$144,894	\$1,520	3,525	\$2,540	\$6,081
4	NQ	45	2,035	21	NA	93	8%	0.28	39%	162,328	4%	0.15	\$62,028	\$9,038	4,382	\$2,196	\$81,342
5	NQ	40	2,341	31	NA	194	17%	0.37	47%	425,980	9%	0.23	\$91,112	\$21,178	5,694	\$3,963	\$296,489

Table 15. Southern area summary of 2014-2016 fishing activity by vessels making one or more trips >= 2000 lbs. of whiting.

Alts.	Qual. Cat.	Avg. GRT	Qualifying fleet histories	Vessels w/ trips >= 2000 lbs. whiting	Latent Effort	Trips > 2000 lbs.	Share whiting trips (%)*	Ratio whiting/ fish trips	Percent whiting trips > 2000 lbs.	Annual average whiting, lbs.	Share of whiting landings (%)*	Ratio whiting/ fish values	Annual fish revenue per boat	Annual SMS revenue per boat	Whiting lbs./trip on trips >2000 lbs.	Whiting revenue per trip on trips >2000 lbs.	Annual fleet SMS revenue
1	I	151	40	33	18%	1,141	78%	0.57	36%	7,420,422	91%	0.21	\$856,436	\$191,558	17,222	\$13,139	\$5,938,286
2	I	190	20	19	5%	876	60%	0.63	46%	6,778,568	83%	0.26	\$1,119,255	\$301,250	20,888	\$16,065	\$5,422,493
3	I	132	51	44	14%	1,216	83%	0.55	32%	7,580,812	93%	0.20	\$705,667	\$147,853	16,421	\$12,493	\$6,061,968
4	I	143	55	41	25%	1,213	83%	0.56	35%	7,574,239	93%	0.20	\$735,998	\$151,194	16,466	\$12,526	\$6,047,749
5	I	139	84	43	49%	1,195	81%	0.58	36%	7,501,265	92%	0.20	\$704,701	\$149,966	16,615	\$12,671	\$5,998,638
1	II	66	74	38	49%	217	15%	0.46	13%	514,886	6%	0.04	\$267,757	\$11,511	4,901	\$3,065	\$368,353
2	II	71	203	83	59%	546	37%	0.46	16%	1,289,180	16%	0.05	\$295,230	\$16,703	4,841	\$3,235	\$985,460
3	II	65	90	56	38%	247	17%	0.43	15%	575,775	7%	0.04	\$236,088	\$11,162	4,883	\$3,111	\$412,986
4	II	65	124	48	61%	204	14%	0.45	12%	485,299	6%	0.04	\$253,019	\$11,717	4,846	\$3,038	\$351,523
5	II	68	159	37	77%	195	13%	0.44	12%	497,086	6%	0.04	\$317,047	\$14,512	4,965	\$3,110	\$362,803
1	NQ	43	971	26	NA	112	8%	0.35	20%	235,366	3%	0.05	\$160,441	\$8,471	4,280	\$2,926	\$160,946
2	NQ	33	908	12	NA	48	3%	0.38	27%	102,926	1%	0.12	\$120,190	\$13,874	5,250	\$3,538	\$69,369
3	NQ	49	1,099	8	NA	7	0%	0.23	13%	14,087	0%	0.02	\$124,623	\$2,534	2,780	\$2,001	\$10,137
4	NQ	45	2,035	21	NA	53	4%	0.28	22%	111,136	1%	0.07	\$94,634	\$6,500	4,371	\$3,067	\$77,999
5	NQ	40	2,341	31	NA	80	5%	0.32	18%	172,323	2%	0.05	\$120,699	\$6,594	4,626	\$3,009	\$112,105