Public Review Draft of EA/RIR/IRFA to
Revise Bering Sea/Aleutian Islands Halibut Prohibited Species Catch Limits

Appendix D:

Statistical Details of the Integrated Multiyear Simulation Model used to Assess Impacts of Revisions to the BSAI Halibut Prohibited Species Catch Limits

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Appendix D: Statistical Details of IMS Model Results

The intent of this technical appendix is to provide addition detail for each of the proposed suboptions to reduce PSC limits for halibut. All of the results reported here are outputs of the Iterated Multi-year Simulation Model (IMS model) as described in section 4.6 of the main document. All of the sections report impacts relative to the status quo.

Table 1 outlines all options and suboptions, and serves as an outline to the subsequent sections. As shown, no impacts exist for options 4 and 5; nor do any impacts exist for some suboptions within the Longline CP and CDQ participants. Therefore, no detailed data for these suboptions are included. In addition to summarizing results for each suboption, results are also provided for each of the reductions for 'all sectors' combined.

Table 1 Summary of BSAI Halibut PSC Limit Reduction Options and Suboptions

Option	Affected Sector or Fishery Group	Affected Target	Sub-option	Reduction Percent
Option 1	A80-CPs	All Targets	a	10%
			b	20%
			c	30%
			d	35%
			e	40%
			f	45%
			g	50%
Option 2	BSAI TLA	All Targets	a	10%
			b	20%
			c	30%
			d	35%
			e	40%
			f	45%
			g	50%
Option 3	Longline CPs	Pacific cod	a	No Impact
			b	No Impact
			c	30%
			d	35%
			e	40%
			f	45%
			g	50%
Option 4	Longline CPs & CVs	All Other Targets (non-IFQ)	All	No Impact
			All	No Impact
Option 5	Longline CVs	Pacific cod	All	No Impact
Option 6	CDQs	All Targets	a	No Impact
			b	No Impact
			c	No Impact
			d	35%
			e	40%
			f	45%
			g	50%
All Sectors and Fishery Groups	All Sectors and Fishery Groups	All Species	a	10%
			b	20%
			c	30%
			d	35%
			e	40%
			f	45%
			g	50%

The beginning of each section contains a description of Scenario A and Scenario B for the particular sector. In all cases the two scenarios are designed as "book-ends" or the impacts. Scenario A will have lower impacts while Scenario B will have higher impacts. Following this introductory text, are subsections for each of suboptions analyzed. Each the subsections are identically organized:

- A table quantifying the statistical details of the option for both the affected groundfish fishery and the commercial halibut fishery for that option under Scenario A and Scenario B.
- A table summarizing the details of the increased yield resulting from savings in U26 halibut under Scenarios A and B under the option.
- Two tableaux for the commercial halibut fishery: each tableau contains eight histograms summarizing the distribution of outcomes under IMS Model for Scenario A and Scenario B. The first tableau summarizes annual average harvest increases relative to the status quo, while the second summarizes increases in wholesale revenues over the 10-year future period discounted to present values.
- A tableau of three figures that summarize impacts to the affected groundfish fishery: two of the figures show histograms of the distribution of the projected change in the sum of wholesale revenue over the 10-year period (discounted to present values) for the affected sector under Scenario A and Scenario B for the option; The third figure is a bar chart summarizes the average impacts on harvests by target fishery as a percentage of status quo harvest.

Each section begins with a detailed summary table that provides the following:

1. Number of iterations by IPHC area in which the IMS model estimates no change from the Status Quo—occurs if the Basis Year generates no change in halibut in an area for the year.
2. Minimum and Maximum Changes in the Magnitude of Discounted Present Value from the status quo. Because of all of the iterations with zero impacts, the minimum impacts seen in any iteration are also close to zero. The maximum indicates the iteration with the largest magnitude of change.
3. Mean changes in the Discounted Present Value from status quo were provided in theFigures and are provided again here. On average, about 4 percent of impacts accrue to Area 4B, while 4A and 4CDE split the rest.
4. Standard Deviation Changes in Discounted Present Value. With normal distributions, 95 percent of all of the iterations will fall within two standard deviations of the mean.
5. The median change in the Discounted Present Value of changes from status quo: half of the iterations result in changes that are less than the median, and half are greater than the median.
6. Mean Change in Halibut PSC Mortality (Round Weight): This is the average annual reduction in halibut PSC mortality by Area.
7. Mean Change in Commercial Catch: This is the average annual increase in commercial halibut catch in net-weight tons (mt) by IPHC Area.

The second table summarizes future "U26 Impacts" in Area 4 and in other areas outside of Area 4. These three areas include area in the Gulf of Alaska (Other AK), and "Outside Alaska". Table rows show:

1. Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)
2. Average Annual Average over Last 5 years (2019–2023)
3. DPV of Wholesale Revenue (2013 millions) from U26 Savings
4. Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only
5. DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only

1. Impacts of Options 1a to 1g to Reduce Halibut PSC Limits Amendment 80 Fisheries

The assessment of impacts of Options 1a to 1g which propose to reduce PSC limits for the A80 fisheries is accomplished through the use of the IMS Model, which is described in considerable detail in Section 4.6 of the main document. For each suboption, the IMS Model is run under two different scenarios that represent a low-impact case (Scenario A) and a high-impact case (Scenario B). These scenarios are described below:

- Scenario A: under Scenario A it is assumed that operators of A80-CPs, using sector-wide fishery data for the years 2008 to 2013, and ranking each target in each month and each NMFS management area based on the amount of wholesale revenue generated per ton of PSC, determine how much PSC they must cut from their fishing year based on the new limits. It is then assumed that they agree to avoid fishing in target-area-month combinations with the lowest wholesale revenue per PSC, to the extent necessary to reduce their PSC and meet their PSC limit. For analytical purposes it is assumed that operators can estimate, based on historical fishery data, how much halibut savings will be created by dropping these target-area-month combinations from their repertoire. under this scenario it is also assumed that there are no barriers or any friction that limit transfers of PSC and groundfish quotas among cooperative members or across cooperatives.
- Scenario B: under Scenario B it is explicitly recognized that transfers of groundfish and PSC quotas may not be as "friction-less" as assumed under Scenario A. It is assumed that companies that have excess PSC apportionments transfer it to companies that don't have enough PSC quota. It is also assumed, however, that each company with excess PSC apportionment holds back five percent of its halibut in case it needs it later in the year. Finally, it is assumed that if transfers of halibut are not available, then companies will cut back operations of all vessels based on the months in which they have historically generated the highest PSC mortality and/or lowest amounts of wholesale revenue per PSC. The IMS Model does not make any assumptions regarding the de-activation of individual vessels under this Scenario, and instead assumes that all vessels within each company cut back their fishing year proportionally.

By design, Scenario A has a lower impact than Scenario B, in part because of the assumption that the A80 fleet knows in advance how many "target-area-months" in low-value fisheries they need to avoid to stay under the fleet-wide cap, and in part because of the assumed stickiness in the transfers in Scenario B.

a. Option 1–Suboption a: Reduce Halibut PSC Limits for the A80-CP Fisheries by 10 Percent

Table 2 Statistical Details of the IMS Model Runs for Option 1a): 10 Percent Reduction of PSC Limits for A80-CPs

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	1,317	261	-	-	144	16	-	176	6
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	0	0	0	0	0	0	($0.02)	0	0	0
Maximum Change in Magnitude of DPV	$8.17	$0.11	$7.33	$15.19	$3.25	$0.60	$15.93	$18.59	($13.06)	($83.76)
Mean Change in DPV	$2.22	$0.02	$2.38	$4.63	$1.28	$0.17	$5.31	$6.76	($4.71)	($31.98)
Standard Deviation of Changes in DPV	$1.50	$0.02	$1.26	$2.60	$0.75	$0.10	$2.38	$2.70	$2.14	$12.66
Median Change in DPV	$2.09	$0.02	$2.28	$4.37	$1.39	$0.15	$5.13	$6.57	($4.52)	($31.39)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-18.2	0.0	-21.9	-40.1	-9.4	-1.2	-48.4	-59.0	-40.1	-59.0
Mean Annual Change in Directed Catch (Net Weight MT)	9.2	0.1	10.2	19.5	5.3	0.7	22.6	28.6	-	-

Source: Developed by Northern Economics Using IMS Model Results for Option 3.1.

Table 3 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 1a): 10 Percent Reduction of PSC Limits for A80-CPs

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	5.2	15.2	3.0	23.4	7.7	22.2	4.4	34.3
Average Annual Average over Last 5 years (2019–2023)	1.0	3.0	0.6	4.7	1.5	4.4	0.9	6.9
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.10	$0.28	$0.06	$0.44	$0.15	$0.41	$0.09	$0.65
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	2.1	6.0	1.2	9.2	3.0	8.8	1.7	13.5
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.04	$0.10	$0.02	$0.16	$0.06	$0.15	$0.03	$0.24

Figure 1 **Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 1a): 10 Percent Reduction of PSC Limits for A80-CPs**

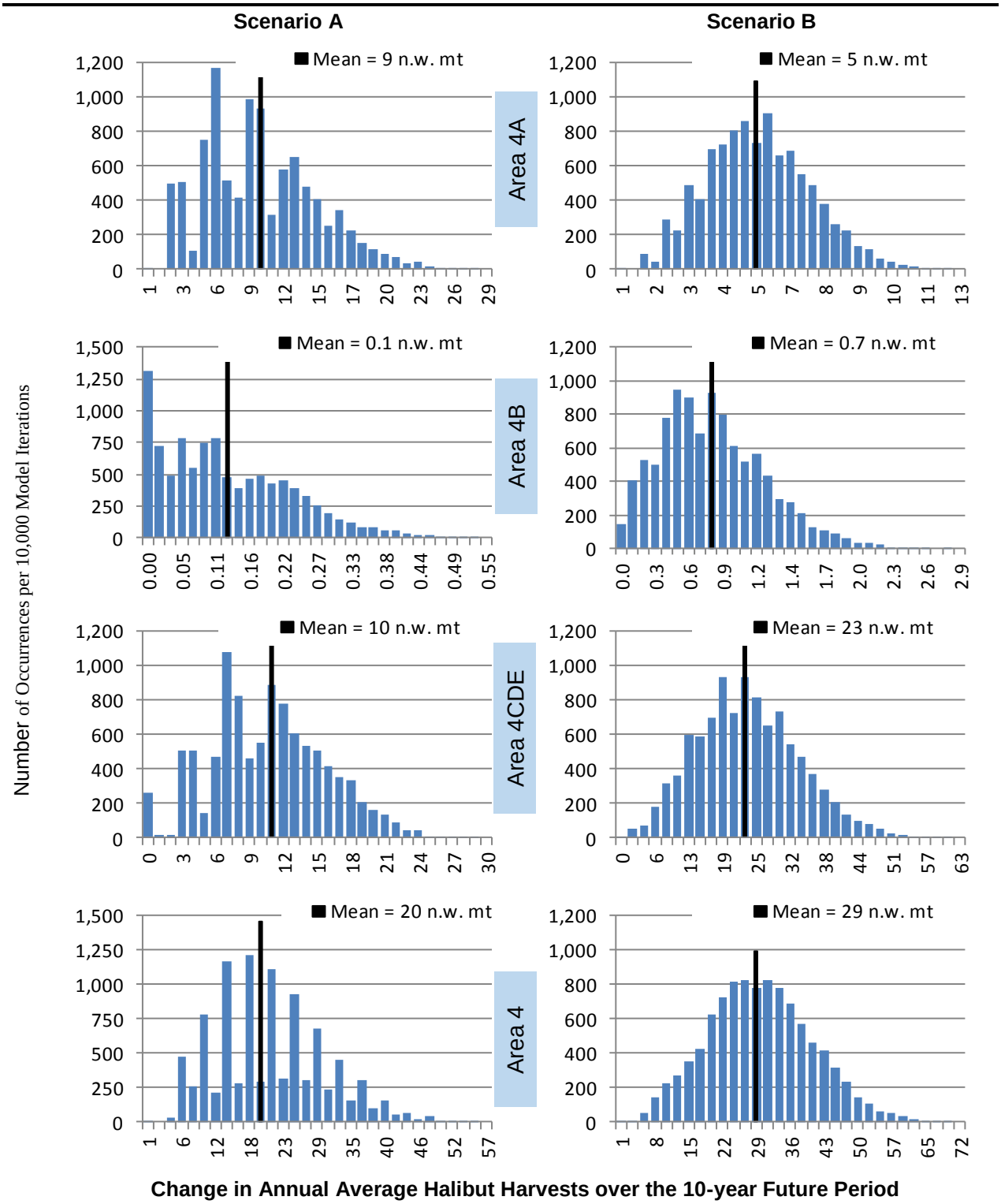


Figure 2 **Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 1a): 10 Percent Reduction of PSC Limits for A80-CPs**

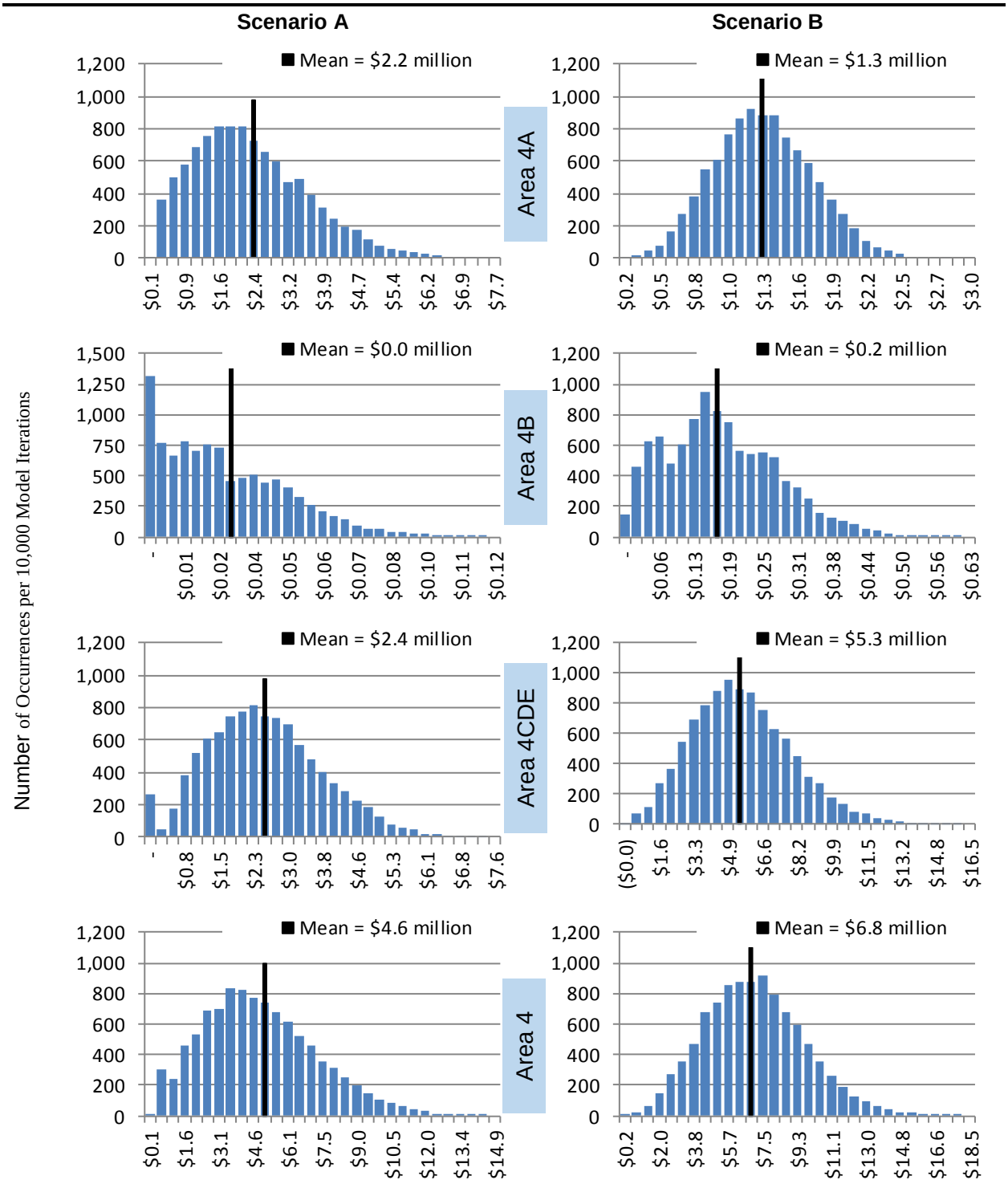
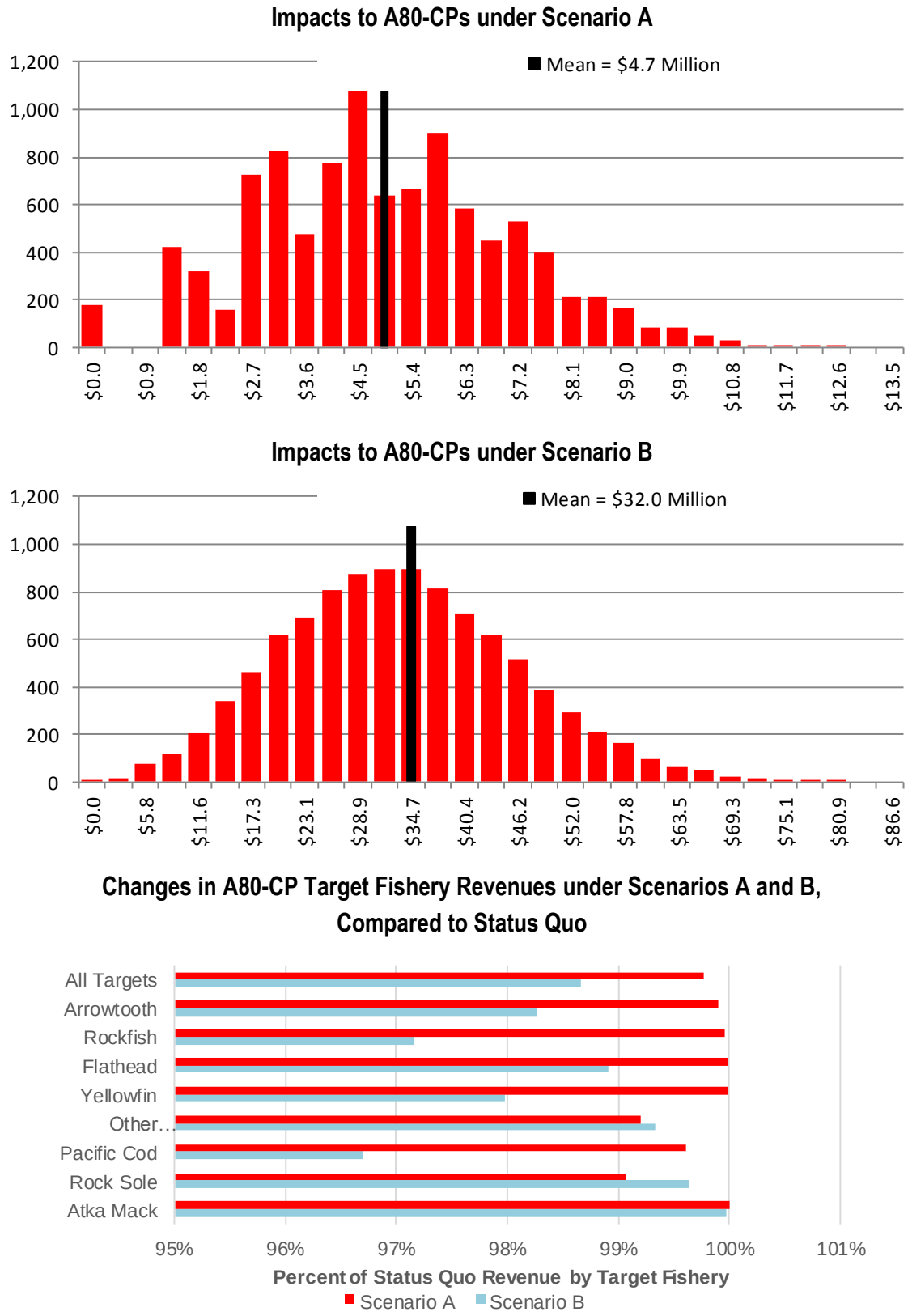


Figure 3 Impacts to A80-CPs under Option 1a): 10 Percent Reduction of PSC Limits



b. Option 1–Suboption b: Reduce Halibut PSC Limits for the A80-CP Fisheries by 20 Percent

Table 4 Statistical Details of the IMS Model Runs for Option 1b): 20 Percent Reduction of PSC Limits for A80-CPs

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$0.00	$2.41	-	-	$0.01	$4.34	-	($9.10)	($22.27)
Maximum Change in Magnitude of DPV	$14.78	$0.33	$29.88	$44.88	$5.22	$2.95	$37.19	$43.68	($73.24)	($239.46)
Mean Change in DPV	$8.90	$0.12	$12.72	$21.74	$3.00	$0.75	$20.86	$24.61	($36.33)	($122.71)
Standard Deviation of Changes in DPV	$1.60	$0.05	$4.11	$5.48	$0.76	$0.43	$4.44	$5.07	$9.80	$29.87
Median Change in DPV	$8.91	$0.11	$12.37	$21.35	$3.05	$0.69	$20.68	$24.39	($35.90)	($121.30)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-77.5	0.0	-114.6	-192.1	-23.8	-5.7	-187.2	-216.7	-192.1	-216.7
Mean Annual Change in Directed Catch (Net Weight MT)	37.6	0.6	54.0	92.2	12.7	3.3	88.5	104.4	-	-
Mean Change in DPV (2013$ million) per annual change in halibut (mt)	$0.24	$0.20	$0.24	$0.24	$0.24	$0.23	$0.24	$0.24	$0.19	$0.57

Table 5 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 1b): 20 Percent Reduction of PSC Limits for A80-CPs

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	24.9	72.1	14.2	111.2	28.0	81.1	16.0	125.1
Average Annual Average over Last 5 years (2019–2023)	5.0	14.4	2.8	22.2	5.6	16.2	3.2	25.0
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.50	$1.32	$0.28	$2.10	$0.56	$1.48	$0.31	$2.36
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	9.8	28.4	5.6	43.8	11.0	31.9	6.3	49.2
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.19	$0.49	$0.10	$0.78	$0.21	$0.55	$0.12	$0.88

Figure 4 **Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 1b): 20 Percent Reduction of PSC Limits for A80-CPs**

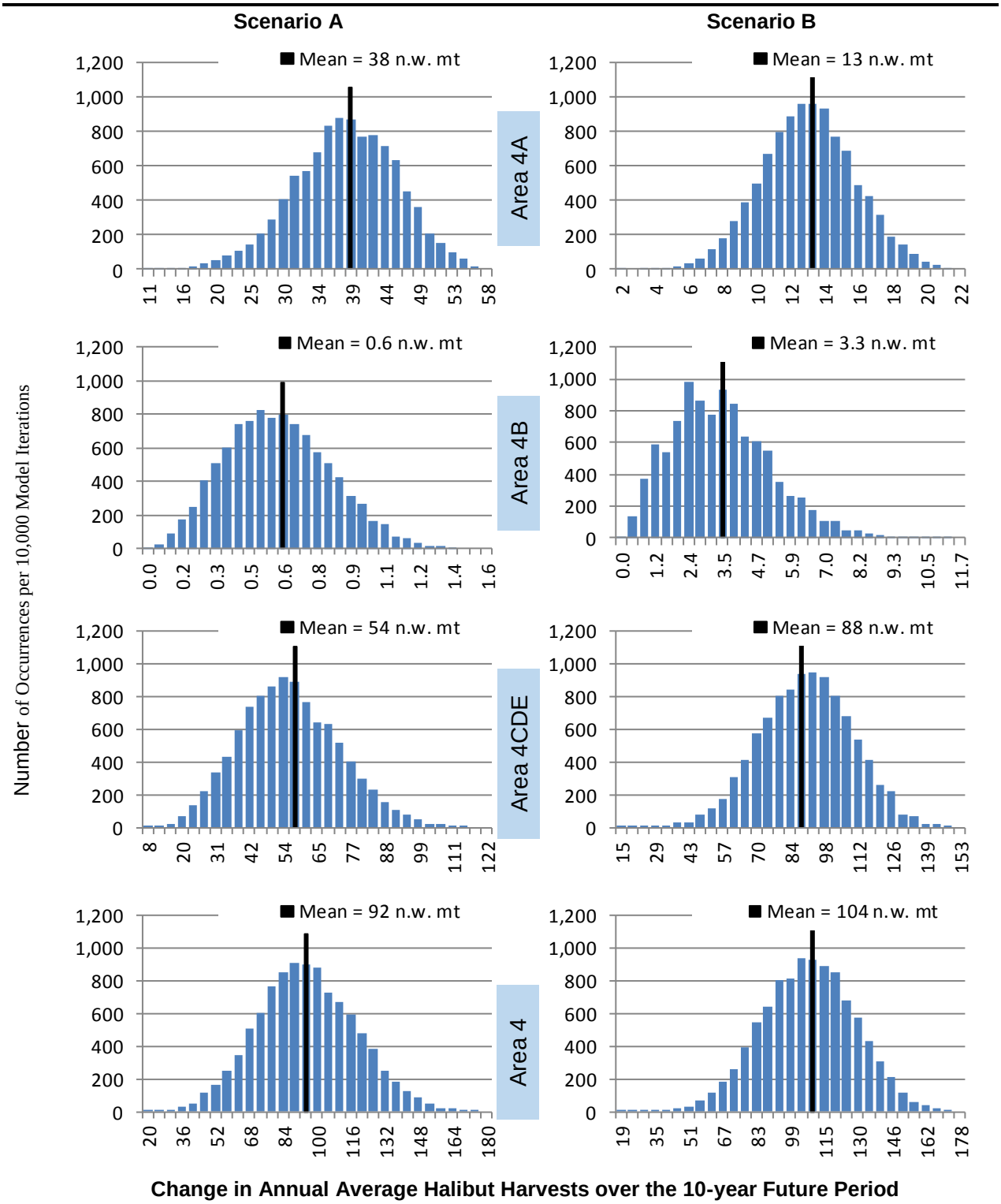


Figure 5 **Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 1b): 20 Percent Reduction of PSC Limits for A80-CPs**

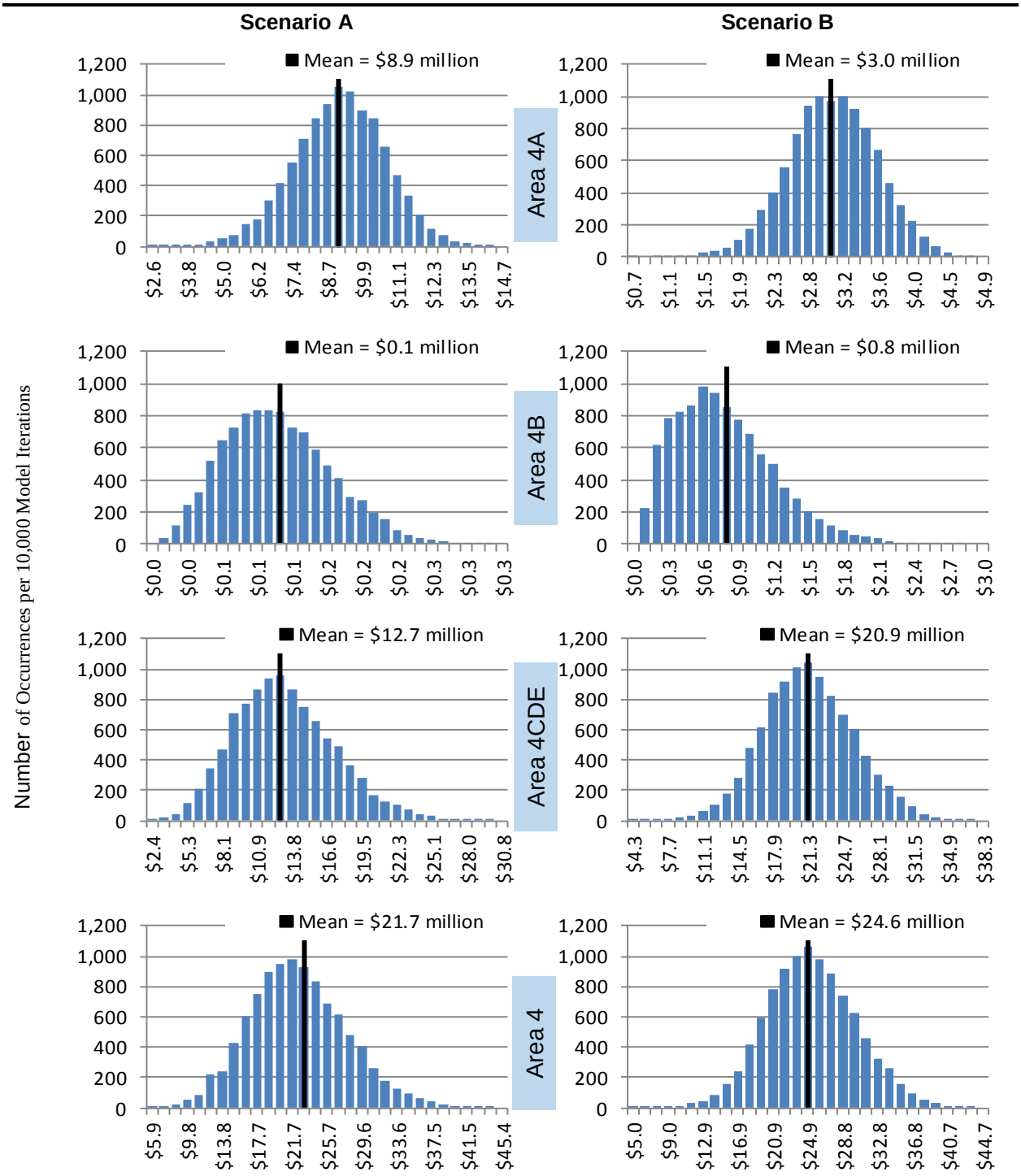
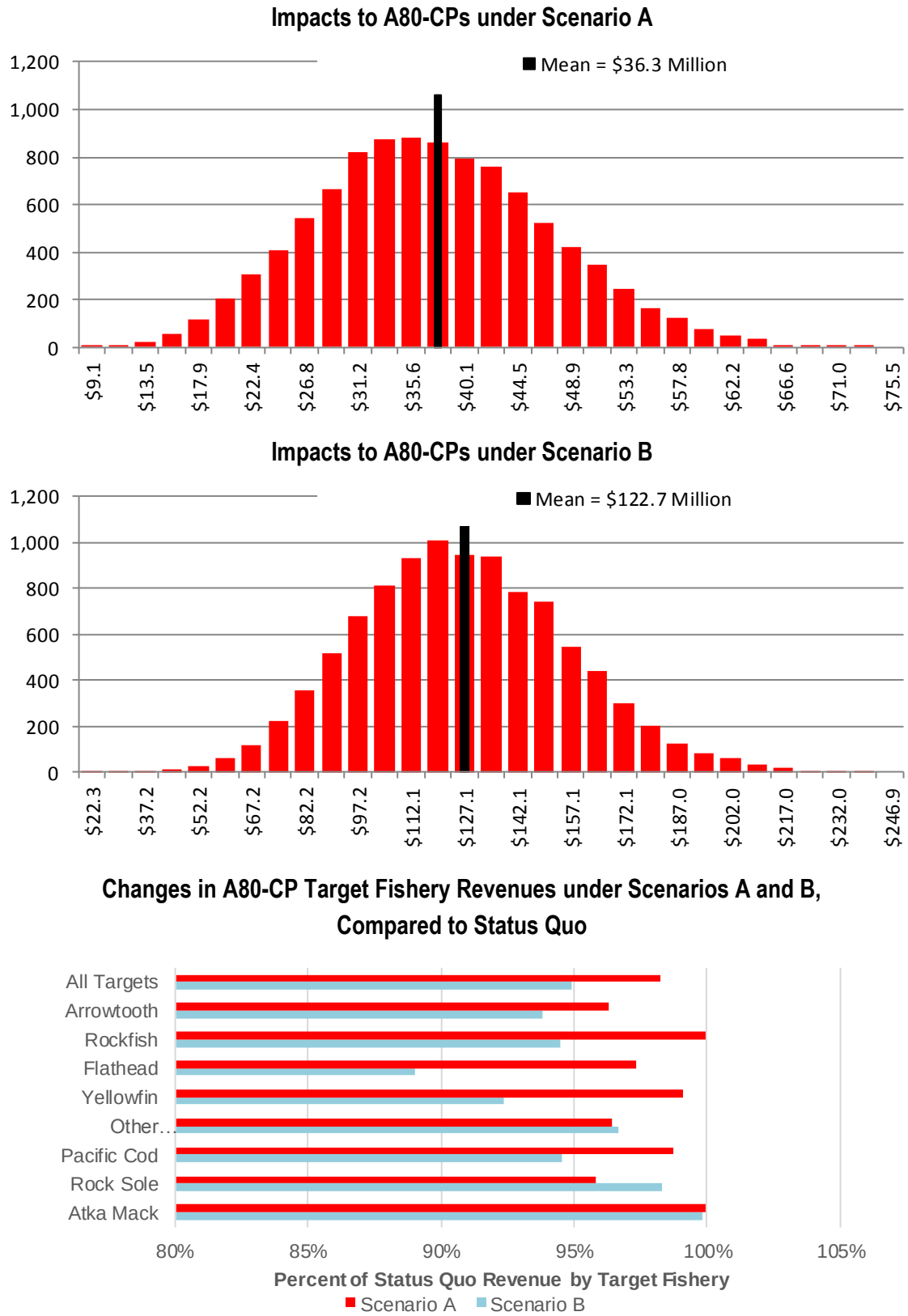


Figure 6 Impacts to A80-CPs under Option 1b): 20 Percent Reduction of PSC Limits



c. Option 1–Suboption c: Reduce Halibut PSC Limits for the A80-CP Fisheries by 30 Percent

Table 6 Statistical Details of the IMS Model Runs for Option 1c): 30 Percent Reduction of PSC Limits for A80-CPs

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$0.10	$16.20	-	-	$0.39	$23.26	-	($53.86)	($149.05)
Maximum Change in Magnitude of DPV	$20.35	$1.11	$54.85	$74.57	$9.95	$4.22	$60.24	$71.53	($168.23)	($401.27)
Mean Change in DPV	$15.86	$0.43	$30.27	$46.56	$6.83	$1.62	$40.56	$49.00	($105.23)	($262.77)
Standard Deviation of Changes in DPV	$1.34	$0.15	$5.29	$5.93	$0.79	$0.62	$4.88	$5.50	$14.49	$35.14
Median Change in DPV	$15.87	$0.42	$29.85	$46.10	$6.82	$1.55	$40.43	$48.78	($104.98)	($260.48)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-139.6	-1.8	-272.8	-414.2	-57.2	-12.4	-364.9	-434.5	-414.2	-434.5
Mean Annual Change in Directed Catch (Net Weight MT)	67.3	2.0	128.6	197.9	29.0	7.0	171.9	207.9	-	-
Mean Change in DPV (2013$ million) per annual change in halibut (mt)	$0.24	$0.21	$0.24	$0.24	$0.24	$0.23	$0.24	$0.24	$0.25	$0.60

Table 7 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 1c): 30 Percent Reduction of PSC Limits for A80-CPs

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	54.2	156.7	30.8	241.7	56.8	164.2	32.3	253.2
Average Annual Average over Last 5 years (2019–2023)	10.8	31.3	6.2	48.3	11.4	32.8	6.5	50.6
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$1.08	$2.87	$0.61	$4.56	$1.13	$3.00	$0.64	$4.77
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	21.3	61.8	12.1	95.2	22.4	64.7	12.7	99.8
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.40	$1.07	$0.23	$1.70	$0.42	$1.12	$0.24	$1.78

Figure 7 **Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 1c): 30 Percent Reduction of PSC Limits for A80-CPs**

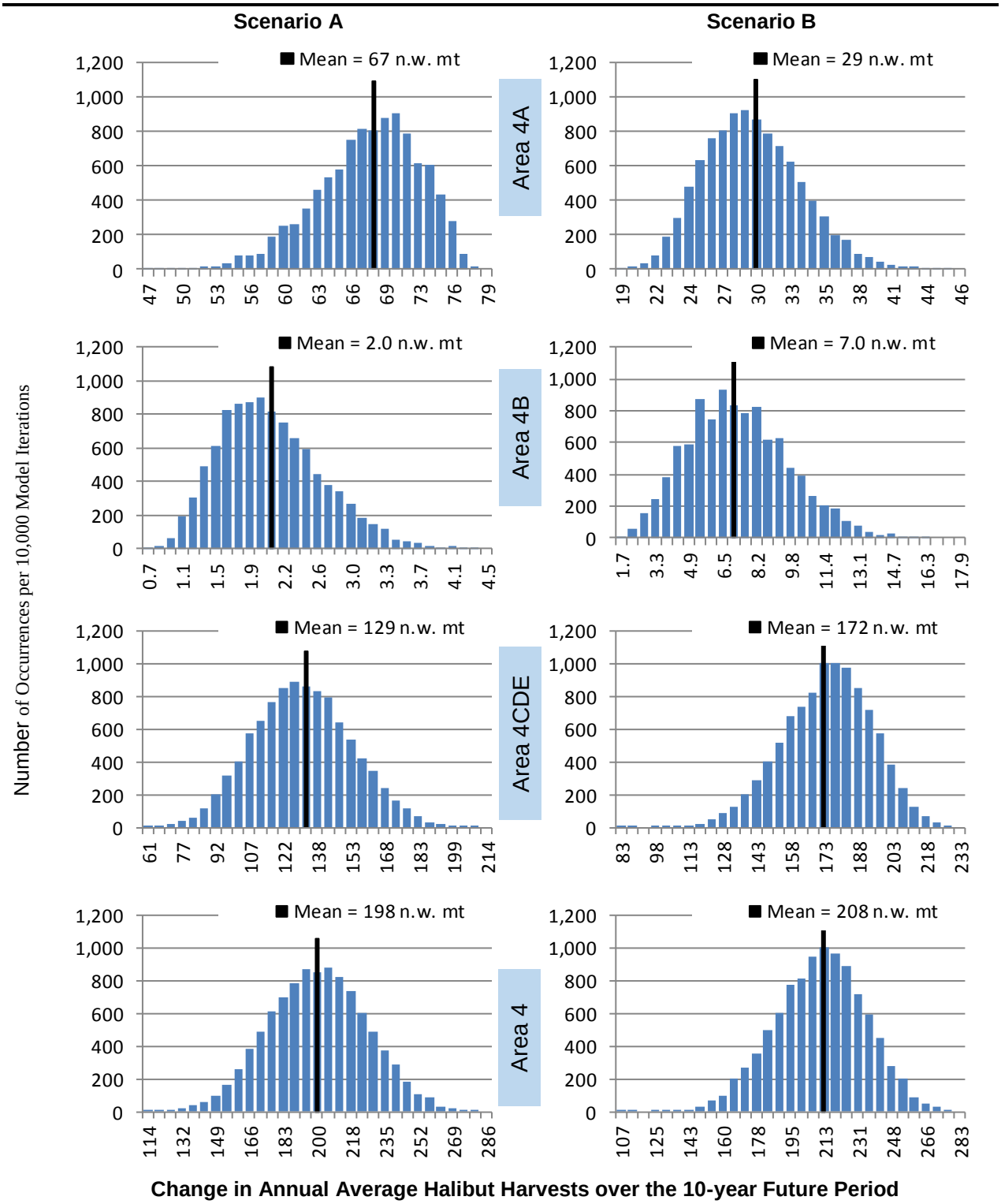


Figure 8 **Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 1c): 30 Percent Reduction of PSC Limits for A80-CPs**

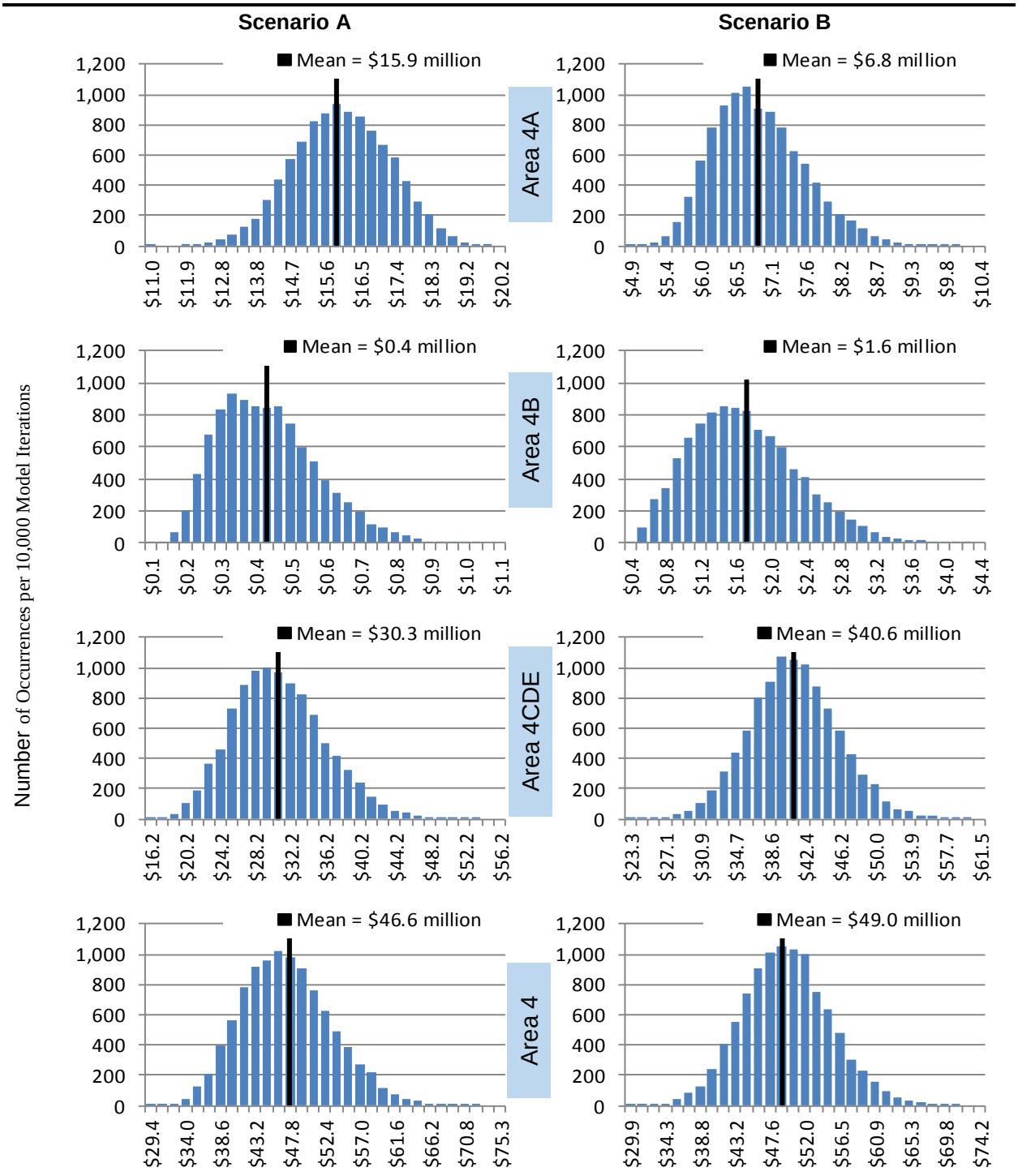
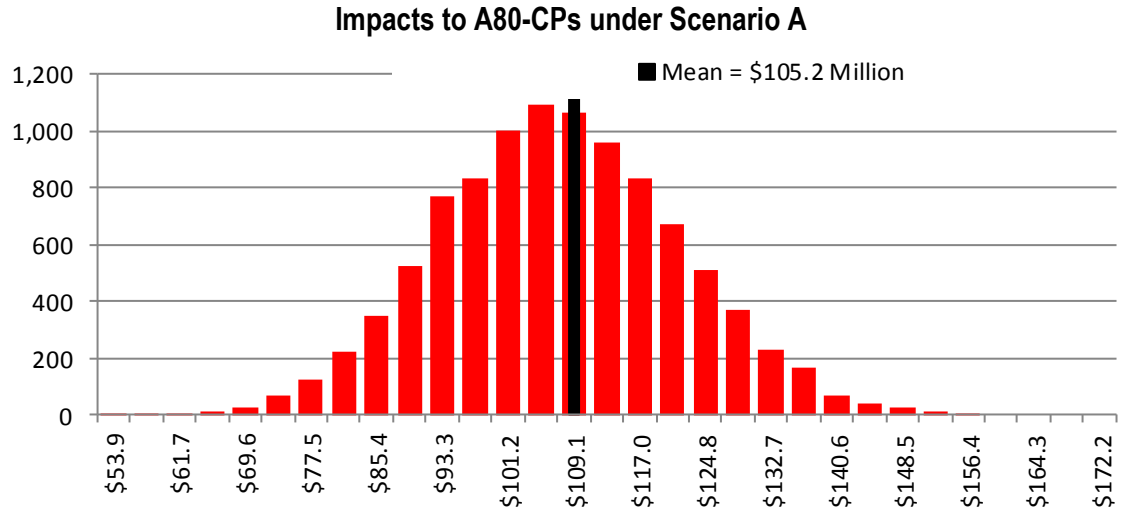
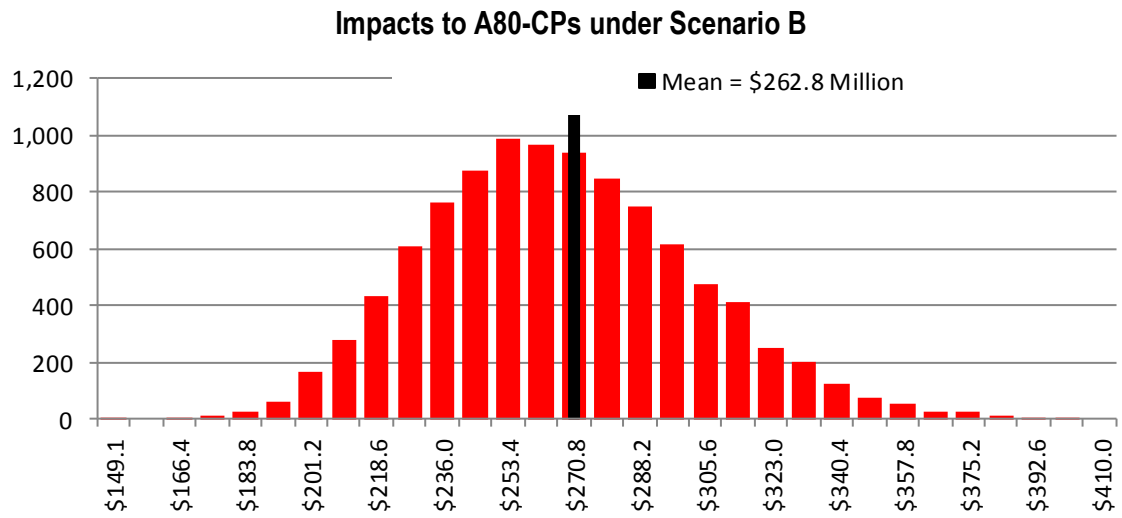
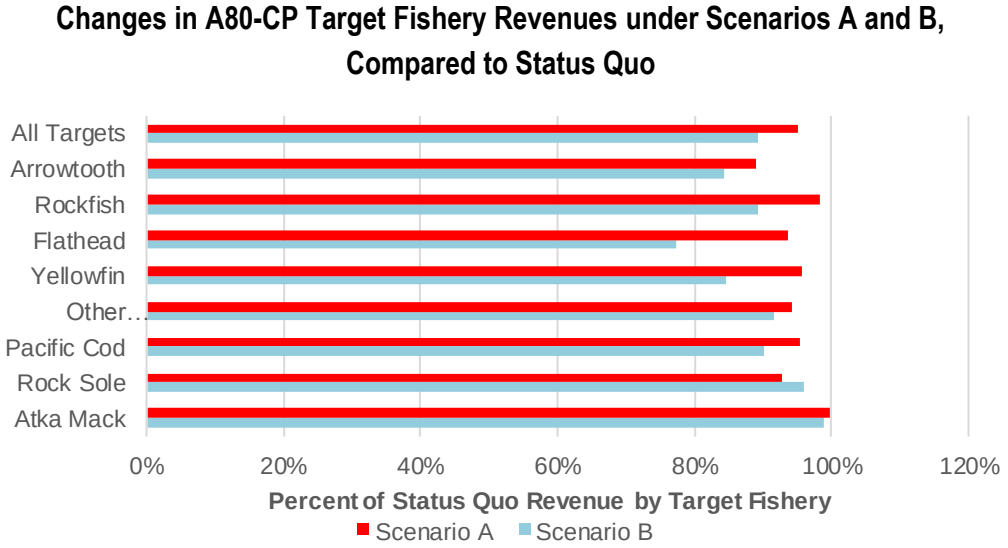


Figure 9 Impacts to A80-CPs under Option 1c): 30 Percent Reduction of PSC Limits







d. Option 1–Suboption d: Reduce Halibut PSC Limits for the A80-CP by 35 Percent

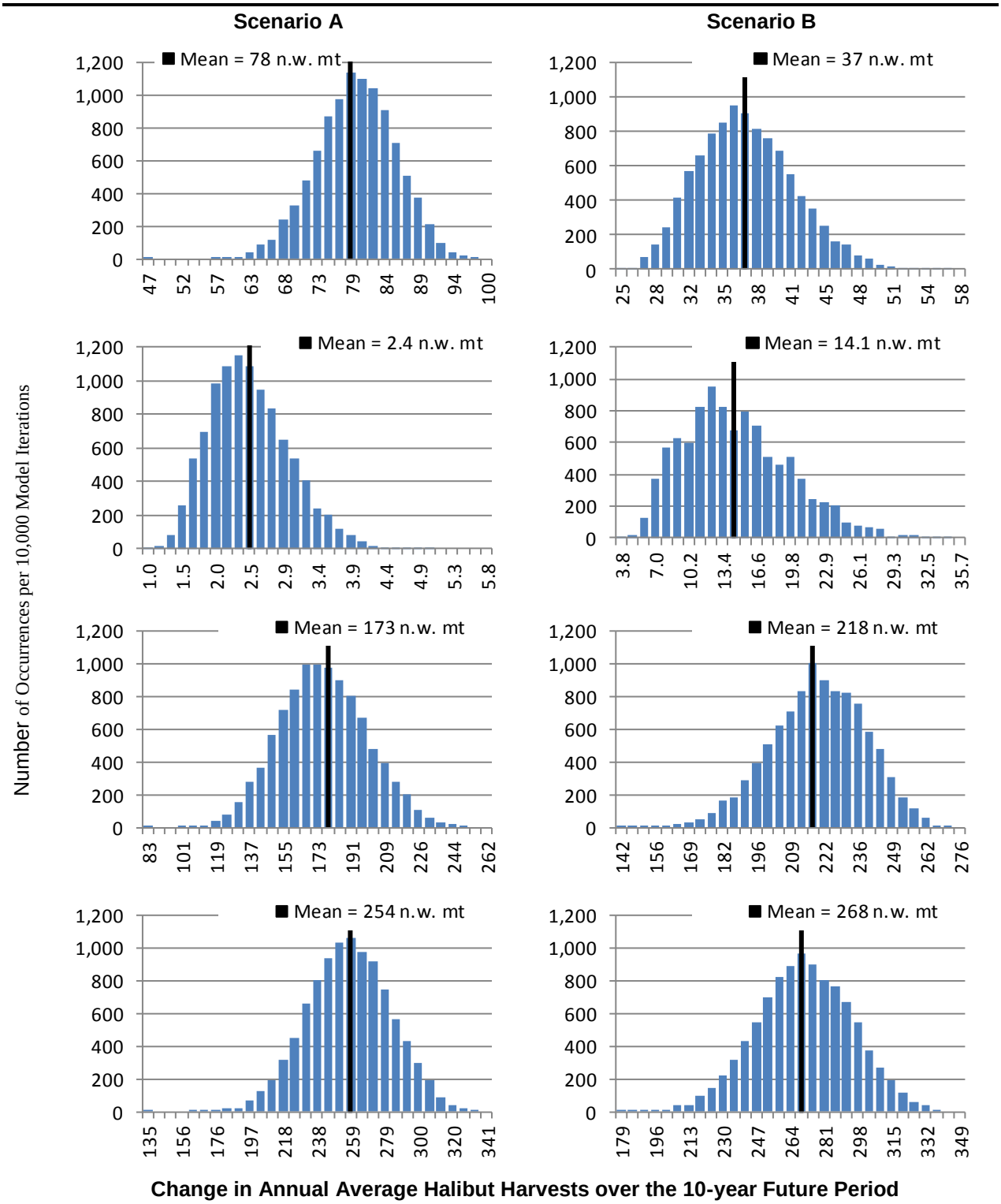
Table 8 Statistical Details of the IMS Model Runs for Option 1d): 35 Percent Reduction of PSC Limits for A80-CPs

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$0.15	$22.97	-	-	$0.91	$35.13	-	($75.77)	($264.27)
Maximum Change in Magnitude of DPV	$24.45	$1.52	$70.57	$90.14	$12.09	$9.27	$70.10	$88.06	($219.30)	($527.86)
Mean Change in DPV	$18.51	$0.51	$40.77	$59.79	$8.58	$3.27	$51.30	$63.15	($163.73)	($365.86)
Standard Deviation of Changes in DPV	$1.63	$0.15	$5.75	$6.31	$0.86	$1.30	$5.05	$6.09	$17.32	$39.04
Median Change in DPV	$18.48	$0.49	$40.32	$59.29	$8.55	$3.06	$51.07	$62.68	($164.01)	($363.85)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-162.5	-1.8	-368.0	-532.3	-72.5	-27.0	-463.0	-562.5	-532.3	-562.5
Mean Annual Change in Directed Catch (Net Weight MT)	78.5	2.4	173.1	253.9	36.5	14.1	217.7	268.4	-	-
Mean Change in DPV ($2013 million) per annual change in halibut (mt)	$0.24	$0.21	$0.24	$0.24	$0.23	$0.23	$0.24	$0.24	$0.31	$0.65

Table 9 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 1d): 35 Percent Reduction of PSC Limits for A80-CPs

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	69.7	201.4	39.7	310.8	73.6	212.9	41.9	328.4
Average Annual Average over Last 5 years (2019–2023)	13.9	40.3	7.9	62.2	14.7	42.6	8.4	65.7
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$1.39	$3.69	$0.78	$5.86	$1.47	$3.89	$0.83	$6.19
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	27.4	79.4	15.6	122.4	29.0	83.9	16.5	129.5
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.52	$1.37	$0.29	$2.18	$0.55	$1.45	$0.31	$2.31

Figure 10 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 1d): 35 Percent Reduction of PSC Limits for A80-CPs



Area 4A

Figure 11 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 1d): 35 Percent Reduction of PSC Limits for A80-CPs

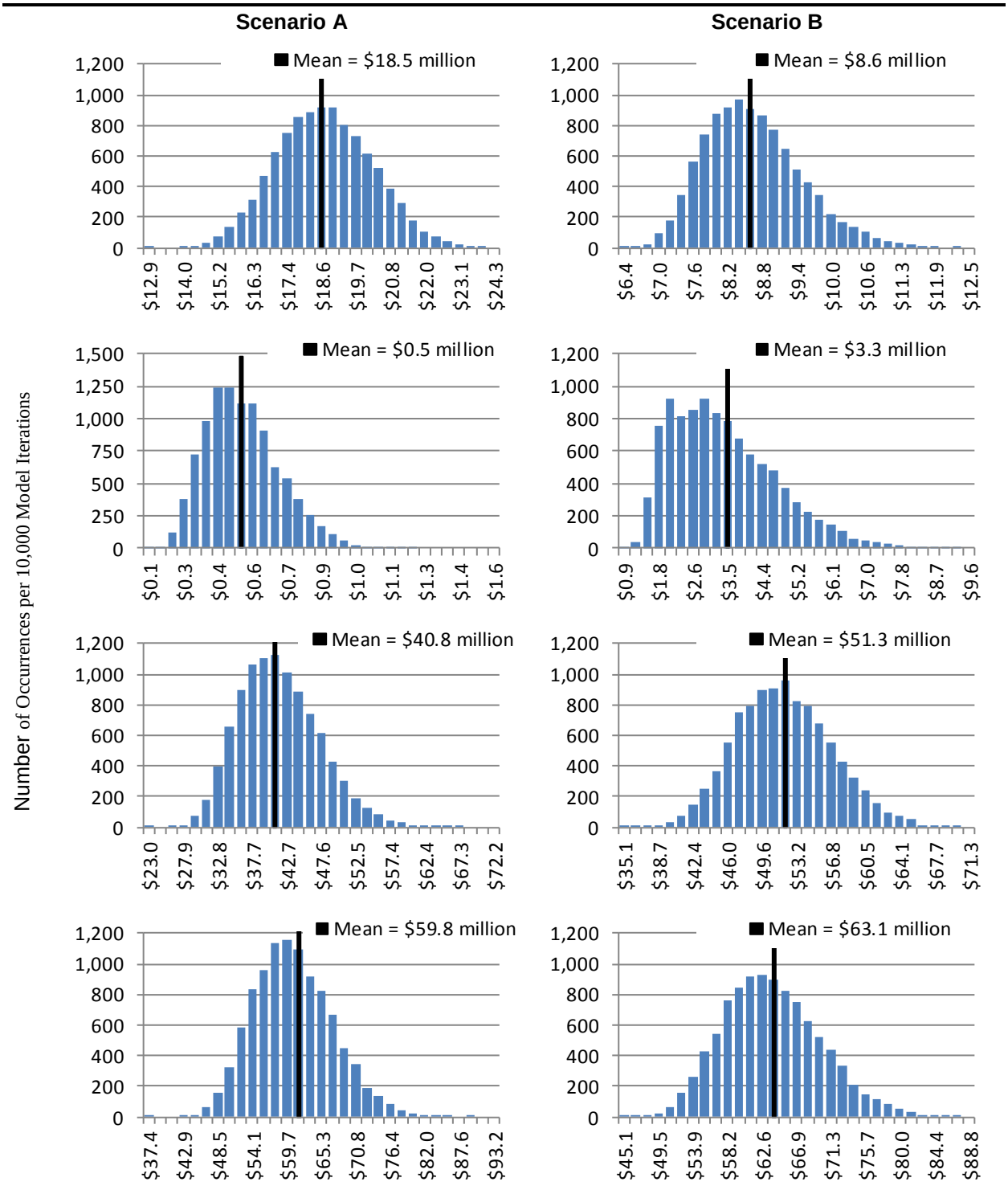
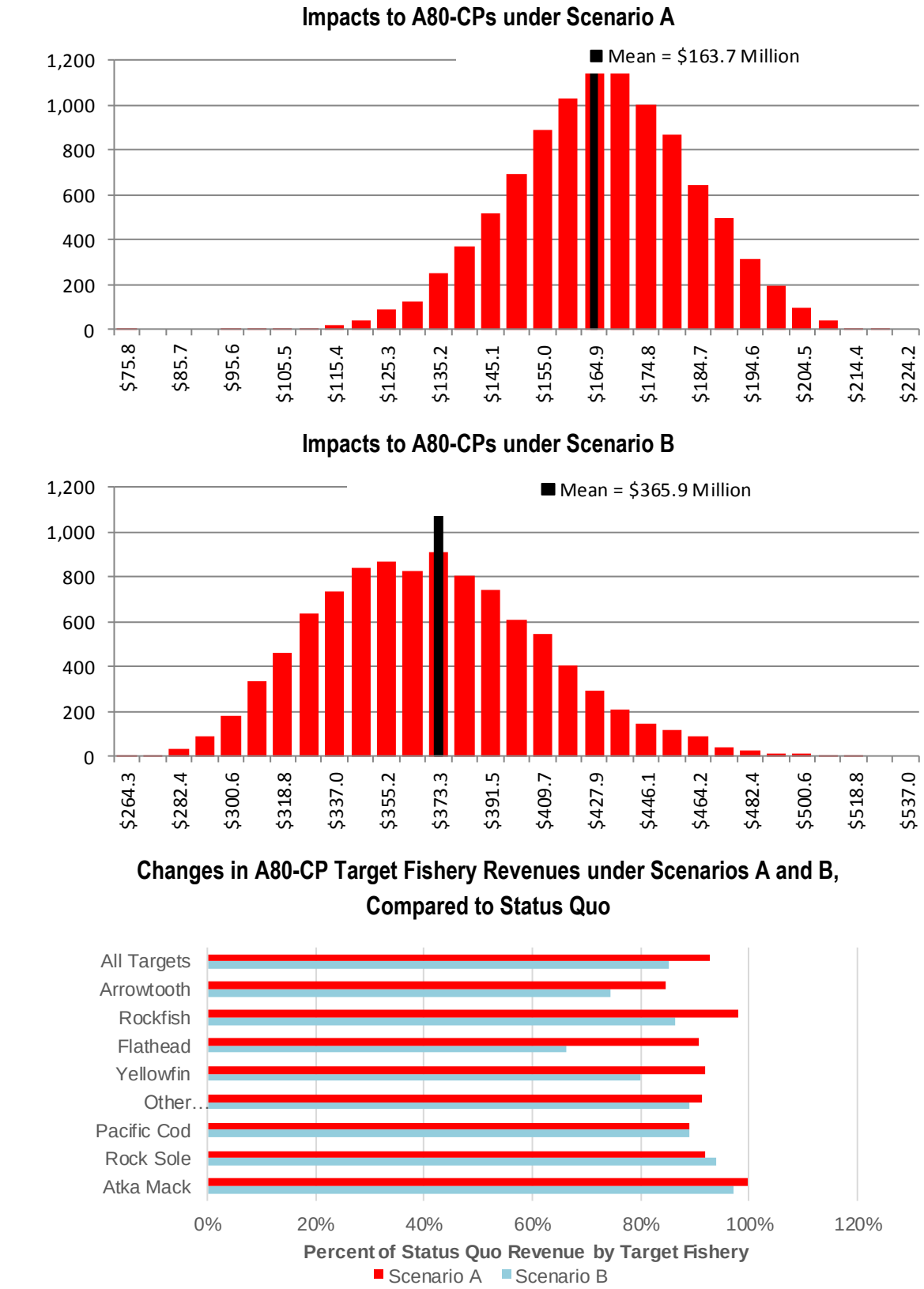


Figure 12 Impacts to A80-CPs under Option 1d): 35 Percent Reduction of PSC Limits



e. Option 1–Suboption e: Reduce Halibut PSC Limits for the A80-CP by 40 Percent

Table 10 Statistical Details of the IMS Model Runs for Option 1e): 40 Percent Reduction of PSC Limits for A80-CPs

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$0.16	$36.89	-	-	$1.34	$43.50	-	($170.68)	($371.86)
Maximum Change in Magnitude of DPV	$26.12	$1.31	$77.01	$99.20	$14.21	$10.34	$85.03	$104.61	($286.47)	($626.69)
Mean Change in DPV	$20.11	$0.58	$51.85	$72.54	$10.06	$3.73	$60.88	$74.66	($228.63)	($468.58)
Standard Deviation of Changes in DPV	$1.70	$0.16	$6.23	$6.77	$1.00	$1.25	$5.80	$6.62	$16.74	$33.04
Median Change in DPV	$20.09	$0.56	$51.27	$71.98	$10.01	$3.56	$60.67	$74.27	($228.29)	($466.17)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-176.4	-1.8	-468.5	-646.7	-84.8	-30.7	-548.4	-663.9	-646.7	-663.9
Mean Annual Change in Directed Catch (Net Weight MT)	85.4	2.7	220.1	308.2	42.8	16.1	257.8	316.6	-	-
Mean Change in DPV (2013$ million) per annual change in halibut (mt)	$0.24	$0.21	$0.24	$0.24	$0.24	$0.23	$0.24	$0.24	$0.35	$0.71

Table 11 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 1e): 40 Percent Reduction of PSC Limits for A80-CPs

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	84.9	245.3	48.3	378.5	87.2	252.1	49.6	388.9
Average Annual Average over Last 5 years (2019–2023)	17.0	49.1	9.7	75.7	17.4	50.4	9.9	77.8
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$1.70	$4.49	$0.95	$7.13	$1.74	$4.61	$0.98	$7.33
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	33.5	96.5	19.0	149.1	34.4	99.3	19.5	153.1
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.63	$1.67	$0.35	$2.66	$0.65	$1.71	$0.36	$2.73

Figure 13 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 1e): 40 Percent Reduction of PSC Limits for A80-CPs

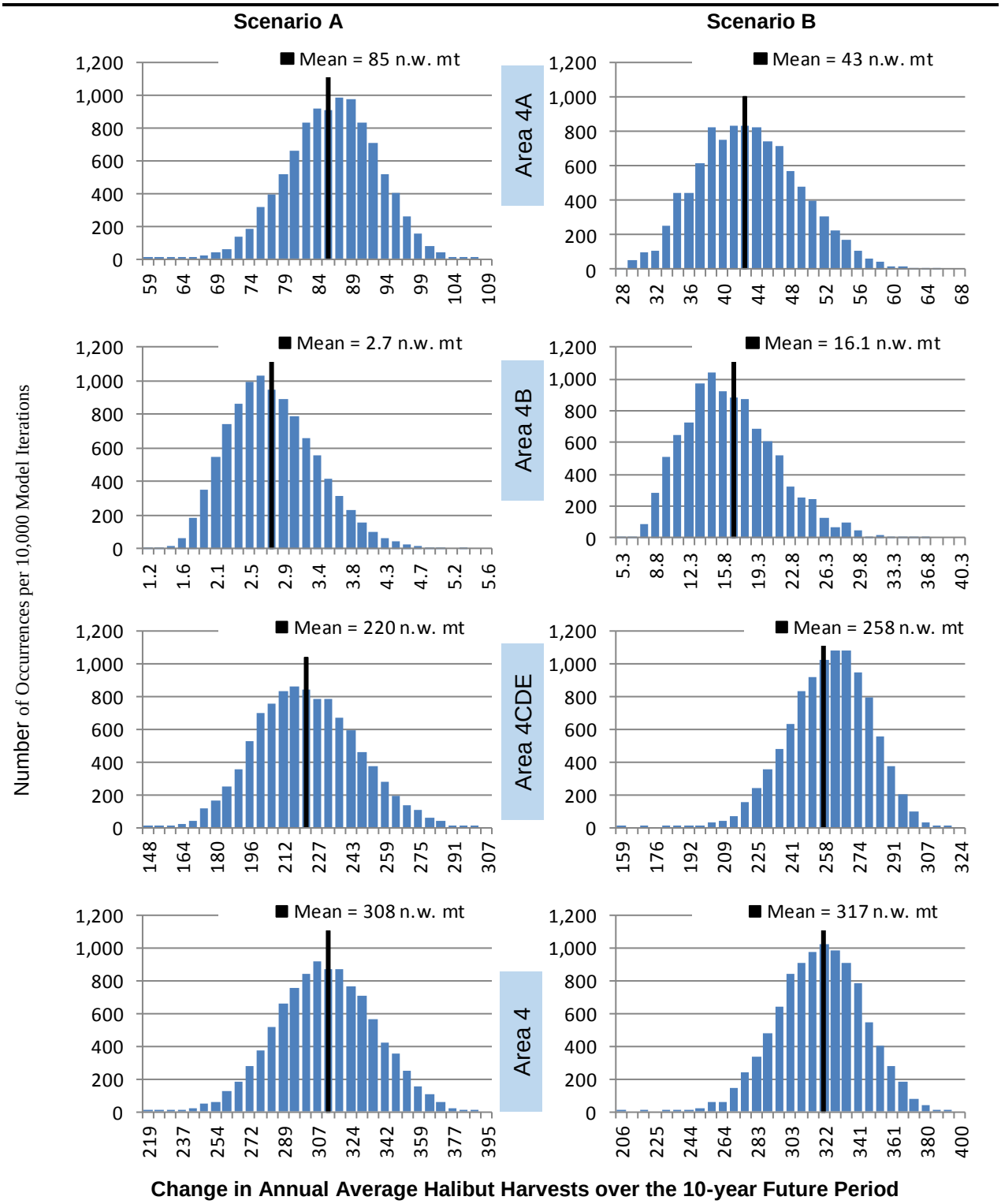


Figure 14 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 1e): 40 Percent Reduction of PSC Limits for A80-CPs

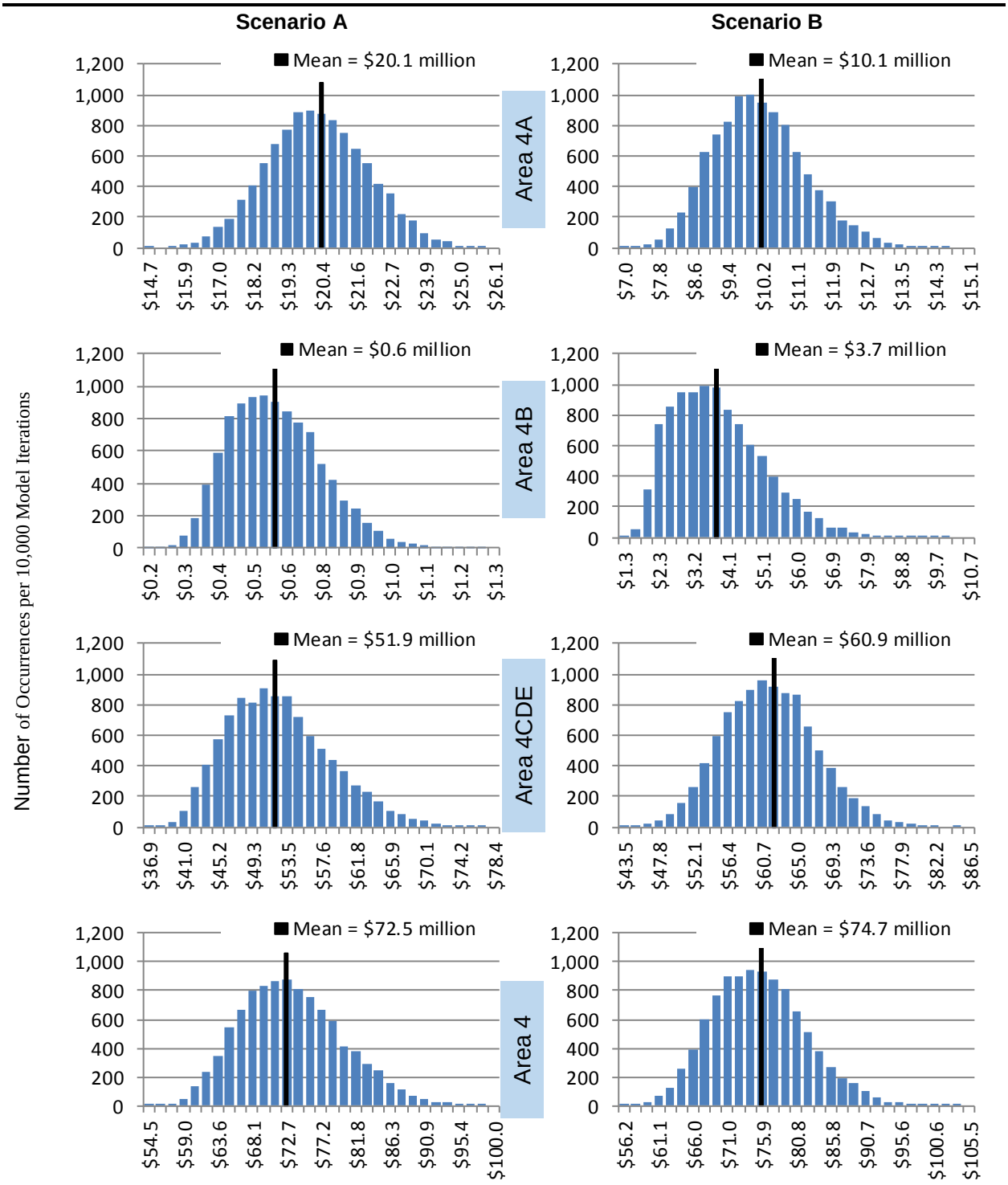
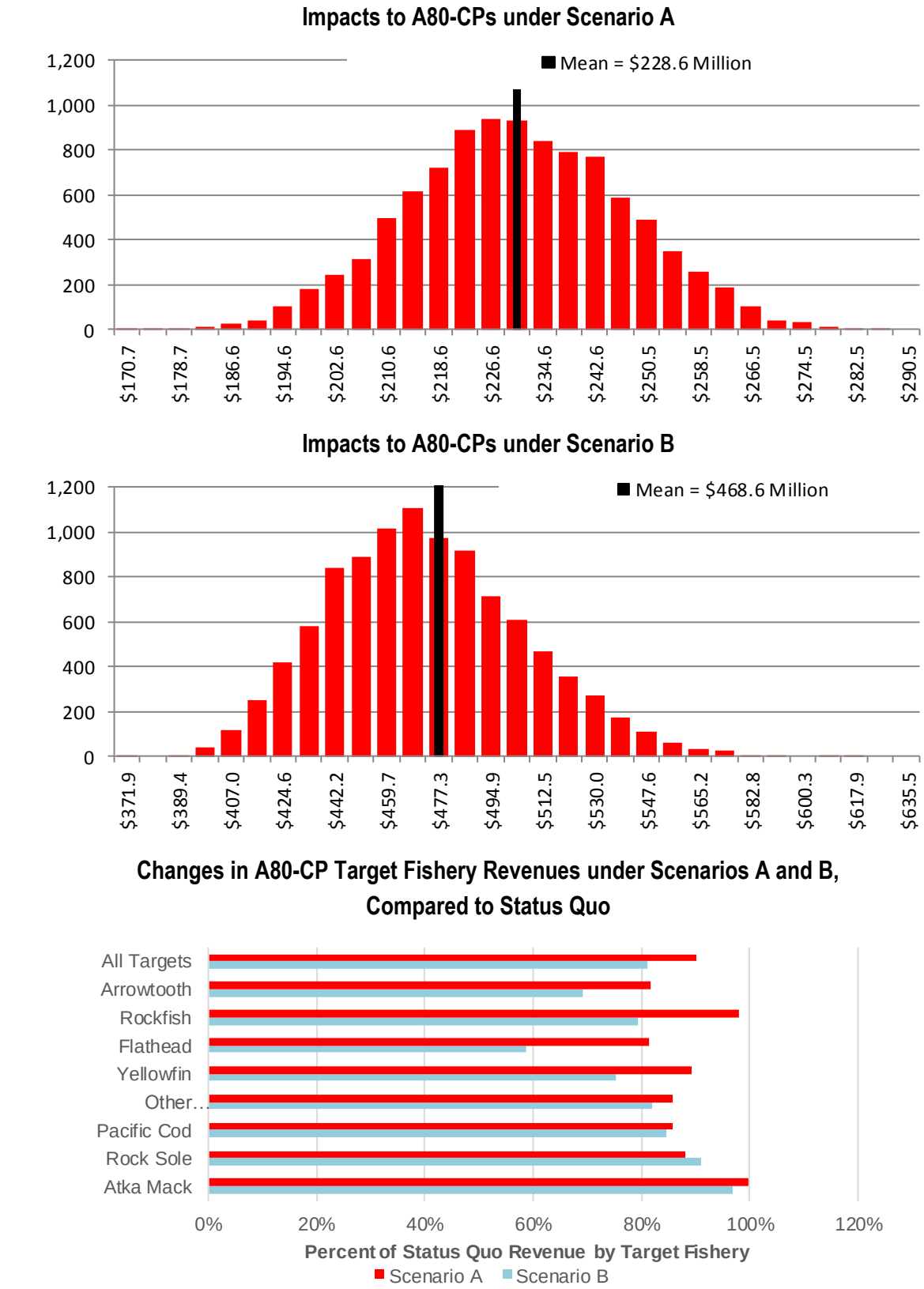


Figure 15 Impacts to A80-CPs under Option 1e): 40 Percent Reduction of PSC Limits



f. Option 1–Suboption f: Reduce Halibut PSC Limits for the A80-CP by 45 Percent

Table 12 Statistical Details of the IMS Model Runs for Option 1f): 45 Percent Reduction of PSC Limits for A80-CPs

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$0.22	$42.29	-	-	$1.73	$53.10	-	($223.75)	($491.12)
Maximum Change in Magnitude of DPV	$34.74	$1.43	$90.01	$118.99	$14.91	$10.65	$93.33	$116.40	($362.15)	($716.17)
Mean Change in DPV	$24.78	$0.69	$60.34	$85.81	$12.11	$4.55	$70.38	$87.05	($292.98)	($574.78)
Standard Deviation of Changes in DPV	$2.37	$0.18	$6.50	$7.53	$0.80	$1.30	$5.96	$7.09	$18.49	$32.28
Median Change in DPV	$24.76	$0.68	$60.03	$85.36	$12.12	$4.41	$70.08	$86.52	($293.00)	($572.44)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-218.2	-2.2	-544.0	-764.4	-103.0	-37.7	-636.1	-776.9	-764.4	-776.9
Mean Annual Change in Directed Catch (Net Weight MT)	105.1	3.3	255.8	364.2	51.6	19.6	298.7	370.0	-	-
Mean Change in DPV (2013$ million) per annual change in halibut (mt)	$0.24	$0.21	$0.24	$0.24	$0.23	$0.23	$0.24	$0.24	$0.38	$0.74

Table 13 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 1f): 45 Percent Reduction of PSC Limits for A80-CPs

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	100.5	290.0	57.1	447.6	102.0	295.1	57.9	455.0
Average Annual Average over Last 5 years (2019–2023)	20.1	58.0	11.4	89.5	20.4	59.0	11.6	91.0
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$2.01	$5.31	$1.13	$8.44	$2.04	$5.40	$1.14	$8.58
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	39.6	114.2	22.5	176.2	40.2	116.3	22.8	179.3
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.75	$1.97	$0.42	$3.14	$0.76	$2.01	$0.43	$3.20

Figure 16 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 1f): 45 Percent Reduction of PSC Limits for A80-CPs

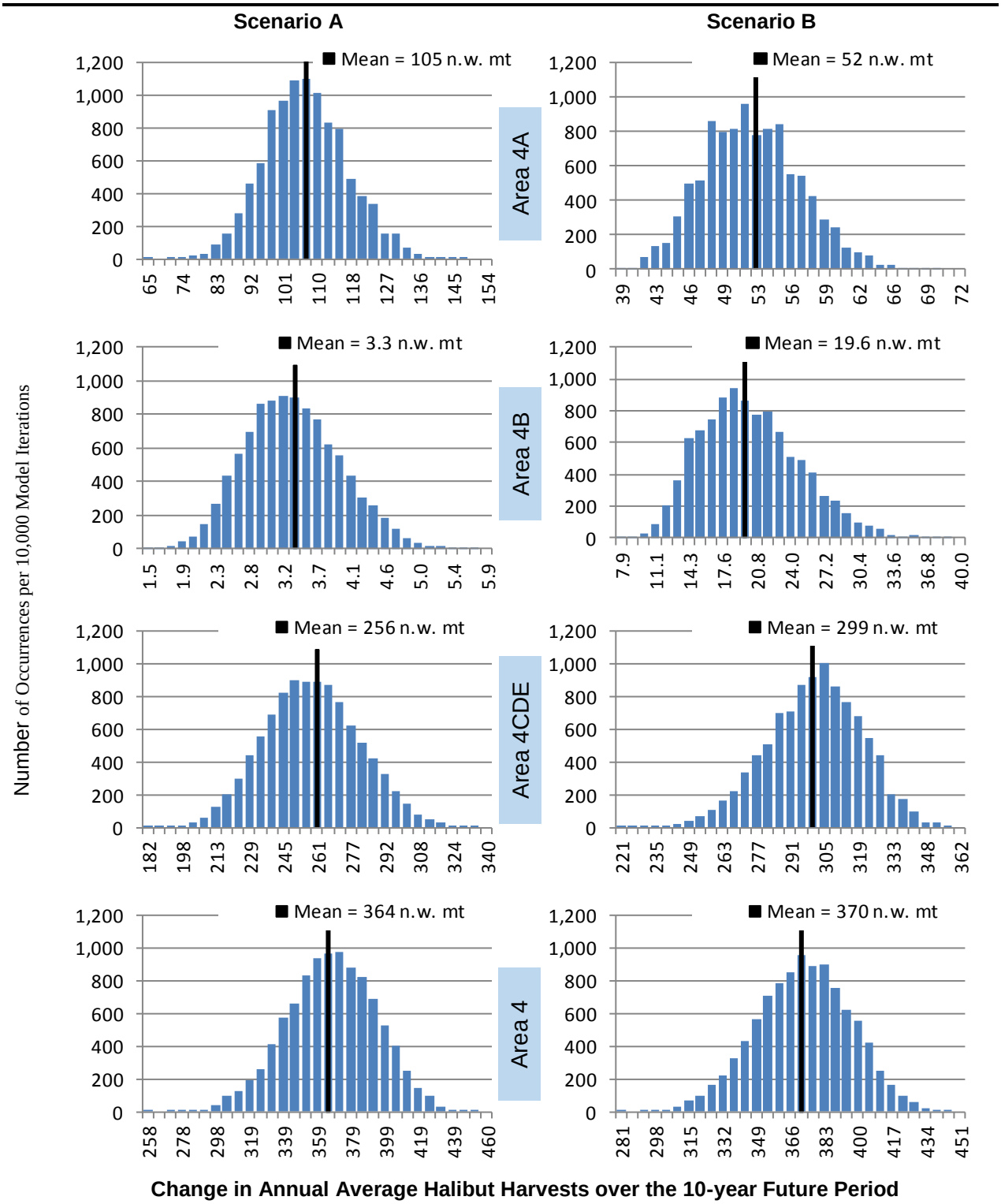


Figure 17 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 1f): 45 Percent Reduction of PSC Limits for A80-CPs

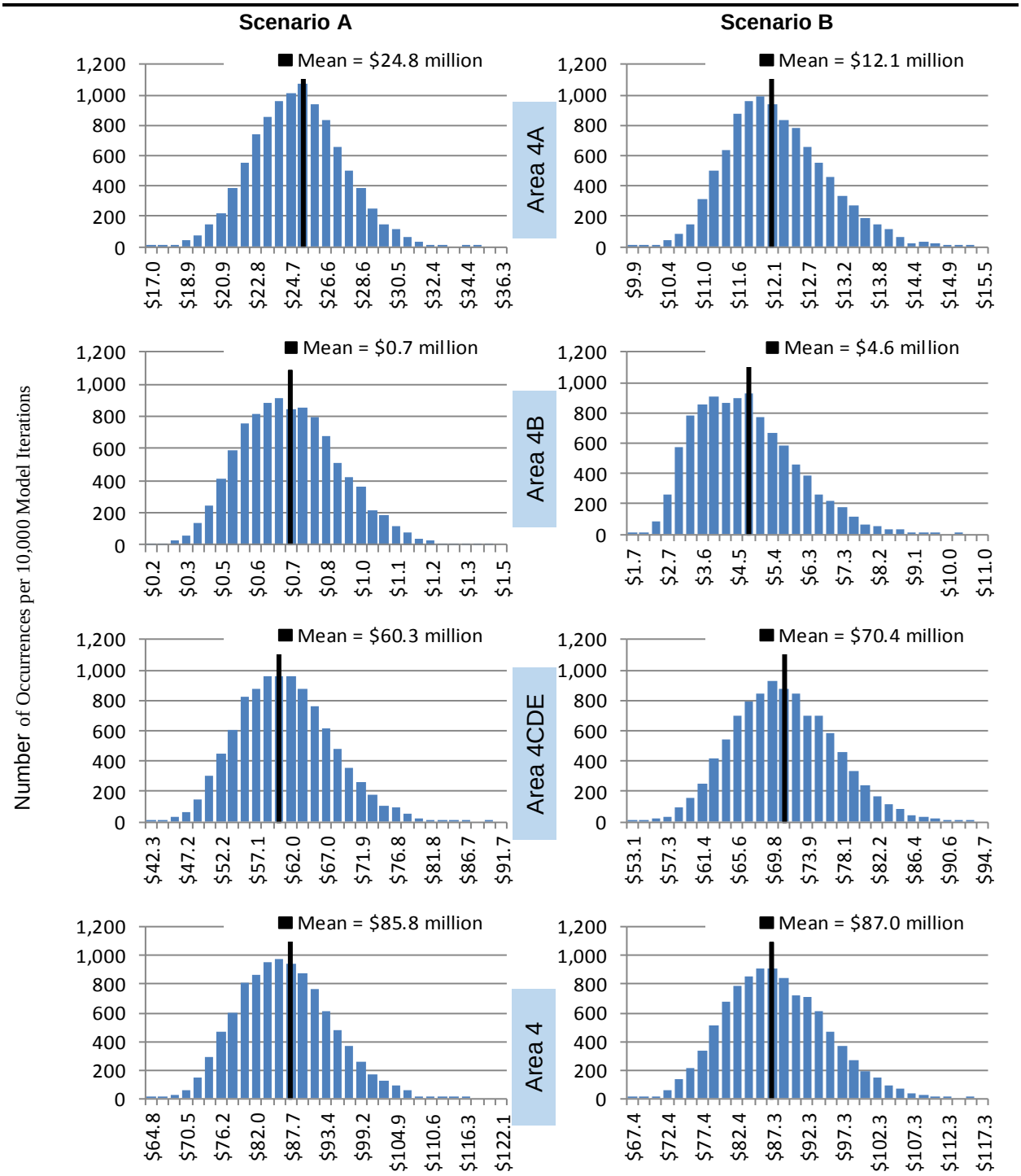
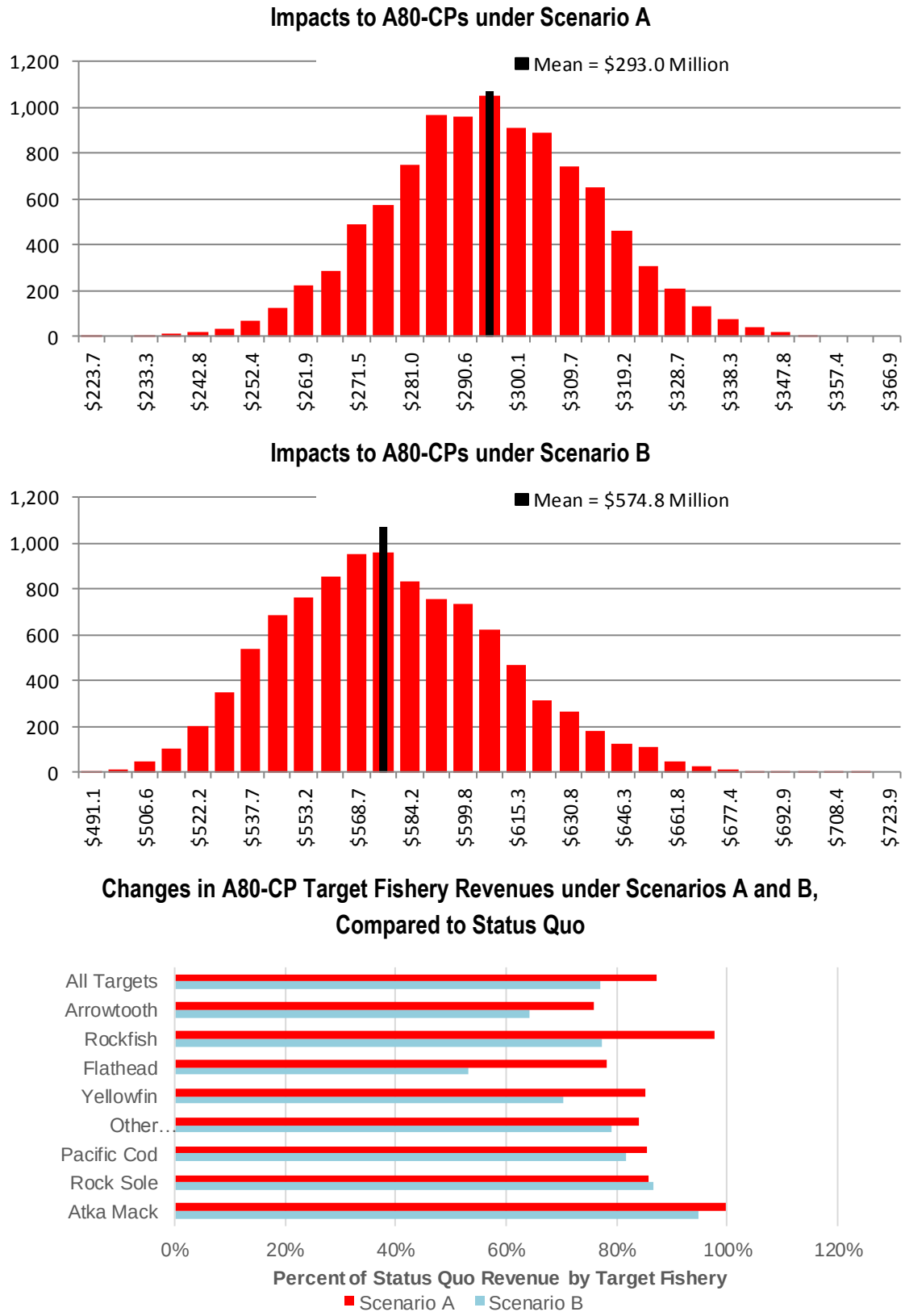


Figure 18 Impacts to A80-CPs under Option 1f): 45 Percent Reduction of PSC Limits



g. Option 1–Suboption g: Reduce Halibut PSC Limits for the A80-CP by 50 Percent

Table 14 Statistical Details of the IMS Model Runs for Option 1g): 50 Percent Reduction of PSC Limits for A80-CPs

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$0.24	$43.62	-	-	$2.42	$59.96	-	($321.60)	($604.63)
Maximum Change in Magnitude of DPV	$40.85	$1.55	$102.21	$133.52	$17.57	$11.20	$105.23	$130.74	($458.49)	($830.32)
Mean Change in DPV	$29.03	$0.77	$68.83	$98.63	$14.17	$5.88	$80.20	$100.24	($374.88)	($699.45)
Standard Deviation of Changes in DPV	$2.86	$0.18	$7.98	$8.15	$0.92	$1.26	$6.85	$7.76	$22.30	$30.50
Median Change in DPV	$28.87	$0.75	$68.54	$98.14	$14.14	$5.78	$80.02	$99.88	($372.63)	($698.59)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-256.3	-2.2	-619.0	-877.5	-120.9	-48.7	-723.9	-893.6	-877.5	-893.6
Mean Annual Change in Directed Catch (Net Weight MT)	122.9	3.6	291.2	417.7	60.4	25.3	340.1	425.8	-	-
Mean Change in DPV (2013$ million) per annual change in halibut (mt)	$0.24	$0.21	$0.24	$0.24	$0.23	$0.23	$0.24	$0.24	$0.43	$0.78

Table 15 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 1g): 50 Percent Reduction of PSC Limits for A80-CPs

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	115.2	333.3	65.5	514.0	117.4	339.4	66.9	523.6
Average Annual Average over Last 5 years (2019–2023)	23.0	66.7	13.1	102.8	23.5	67.9	13.4	104.7
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$2.30	$6.09	$1.29	$9.69	$2.34	$6.21	$1.32	$9.88
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	45.4	131.4	25.8	202.6	46.2	133.7	26.4	206.3
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.86	$2.27	$0.48	$3.61	$0.87	$2.31	$0.49	$3.68

Figure 19 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 1g): 50 Percent Reduction of PSC Limits for A80-CPs

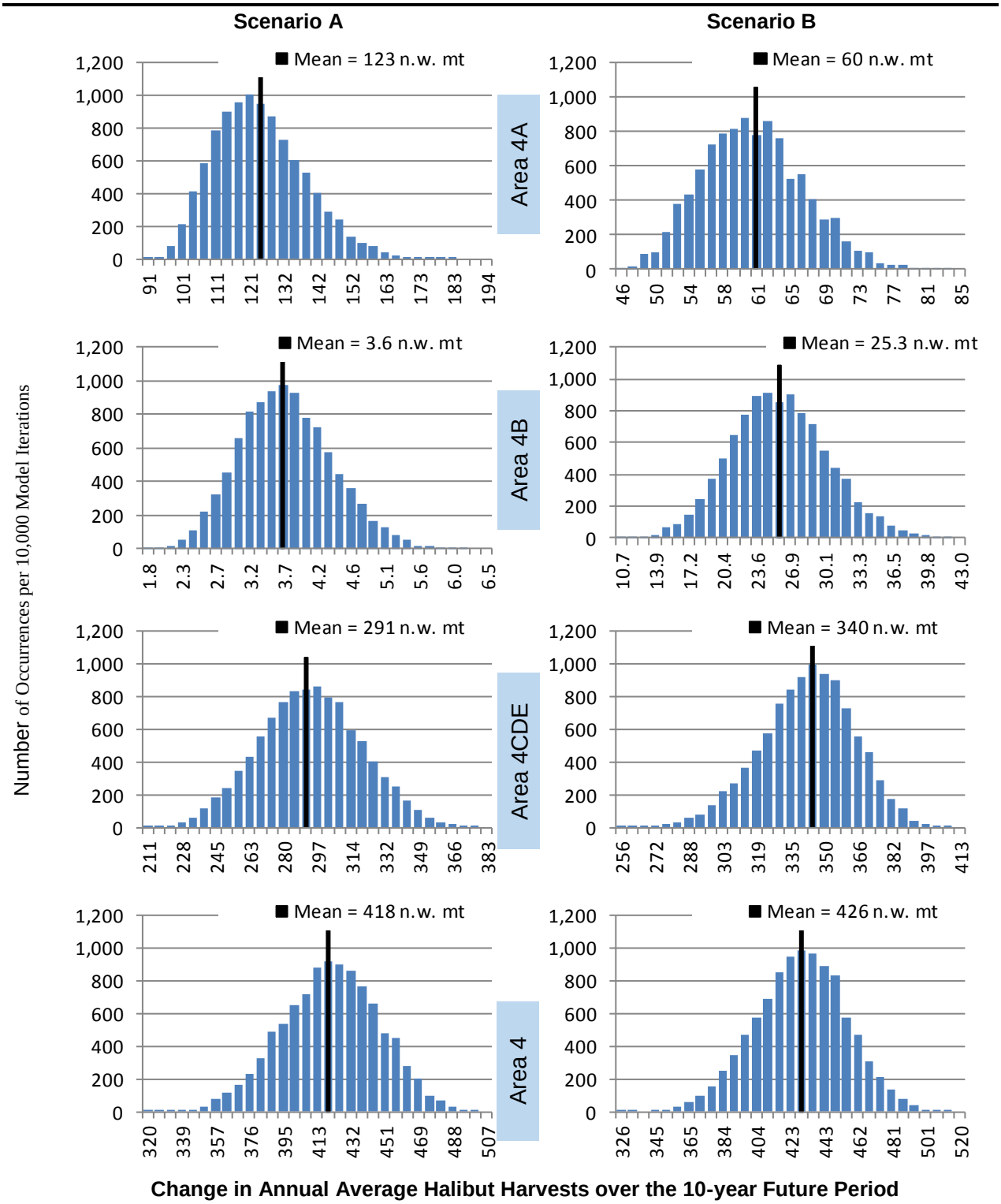


Figure 20 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 1g): 50 Percent Reduction of PSC Limits for A80-CPs

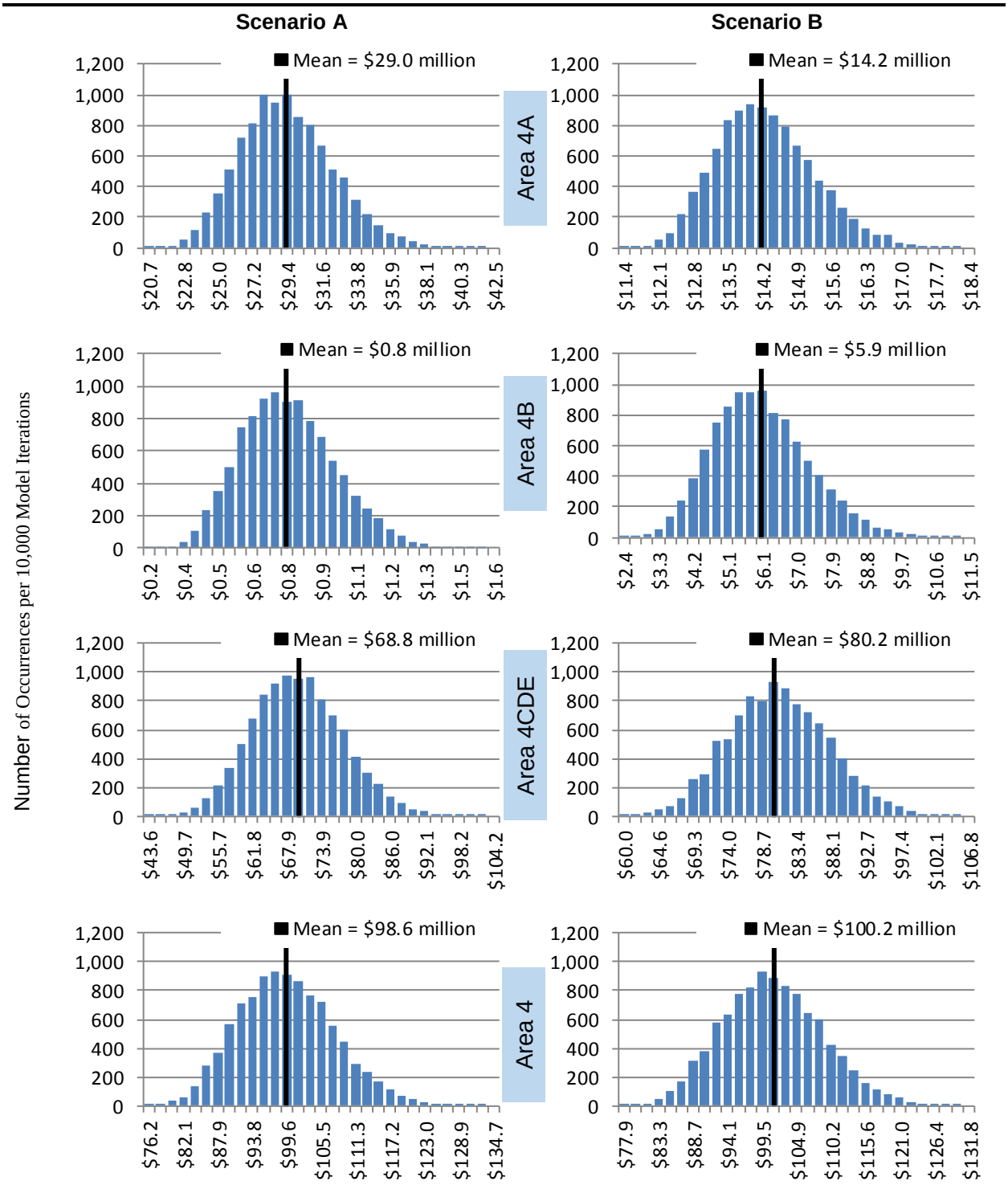
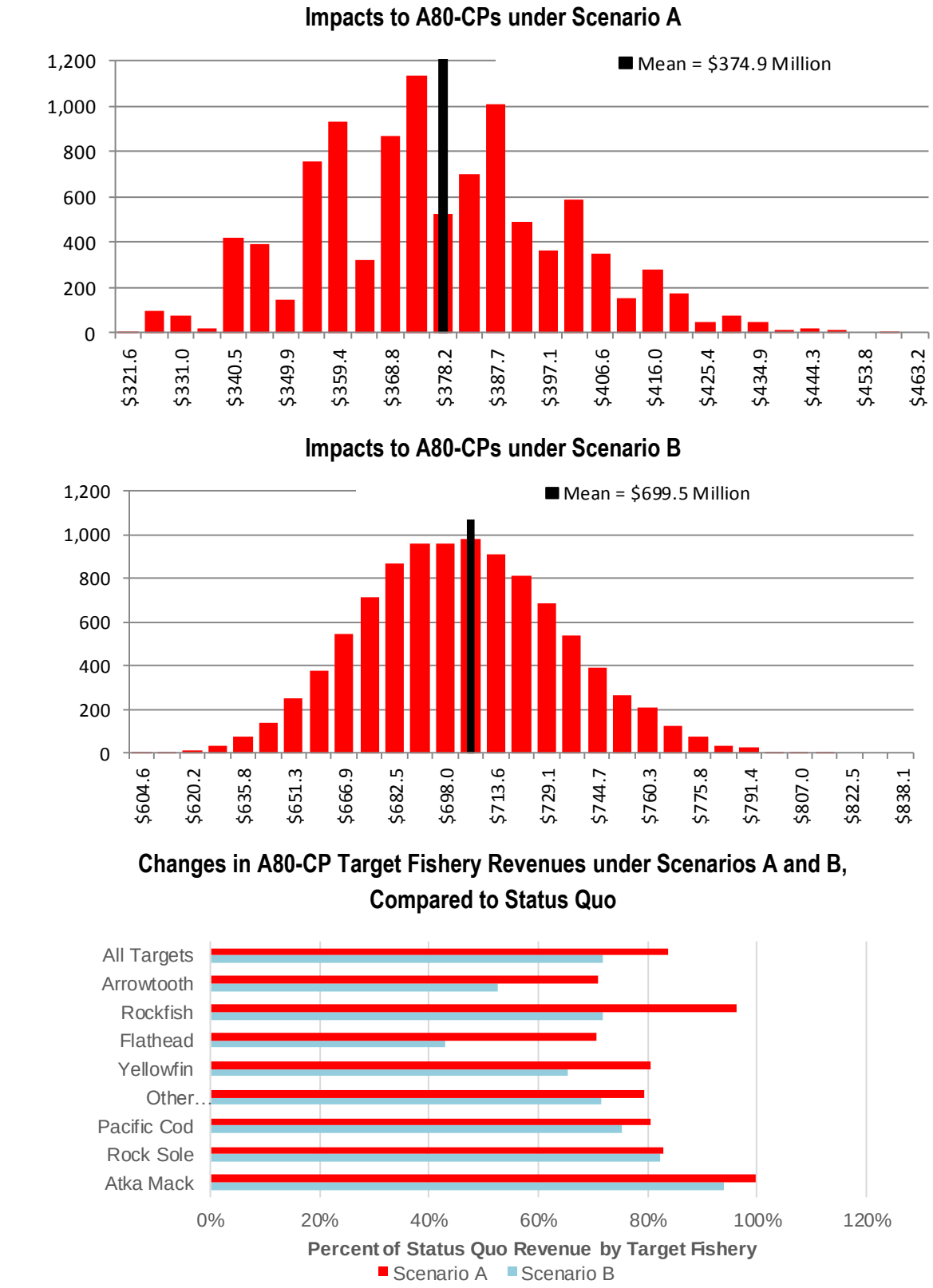


Figure 21 Impacts to A80-CPs under Option 1g): 50 Percent Reduction of PSC Limits



2. Impacts of Option 2a to 2g to Reduce Halibut PSC Limits in the Bering Sea Trawl Limited Access Fisheries

The IMS Model assumes that target fishery apportionments of the PSC limit for BSAI TLA fisheries that are currently utilized will continue to be used in the future. Apportionments are made for: a) Pacific cod; b) Yellowfin sole; c) Rockfish; and d) Pollock|AtkaM|Other. The IMS model also assumes that the pollock target fishery remains exempt from closure due to attainment of the PSC limit, but that the Atka mackerel fishery within the Pollock|AtkaM|Other is constrained by the PSC Limit.

under both Scenarios (A and B) for the BSAI TLA fisheries, it is assumed that the PSC apportionment for the rockfish target fisheries, because of its very small size, is not cut and remains at the levels assigned to it during the Basis Year regardless of the size of the PSC limit reductions—since 2009 only 5 mt of the 876 PSC limit for the BSAI TLA fisheries have been apportioned to rockfish target fisheries. Maintaining the rockfish PSC apportionment at its status quo level during each basis year means that the other BSAI PSC apportionments must be reduced by a slightly higher percentage than the actual PSC limit cut percent under the option. As an example the yellowfin sole PSC limit when 2013 is the basis year equals 167 mt under the Status quo. under Scenario A for Option 2b) is 133.4 mt, a reduction of 20.11%, slightly more than 20% to account for the unchanged Rockfish PSC apportionment. Similarly, the new Pacific cod PSC limit is 362.3 mt, is and for the new Pollock|AtkaM|Other limit (200.1 mt). In addition to the assumption that the Rockfish PSC limit is maintained at status-quo level for each basis year, the following assumptions are made for Scenario A:

- under Scenario A, the yellowfin sole fishery is assumed to be rationalized. Fishery participants are assumed to use an independent contractor to help them determine the order in which months and NMFS areas should be placed off limits in order for the vessels in the target fishery to reduce their PSC to the new lower limit, while mitigating as much as possible the negative revenue impacts of the cuts in groundfish harvests.
- Because of the large number and the wide variety of vessel types participating in the Pacific cod fishery, it is assumed be a race for fish under both Scenarios, and PSC reductions by cutting groundfish are achieved in a last-caught, first-cut methodology.
- under Scenario A, vessels that target Atka mackerel within the PSC apportionment for Pollock|AtkaM|Other are assumed to continue to be constrained by time/area closures. In the A-Season, the IMS Model assumes they monitor the accumulating levels of PSC in the pollock target fishery and time their fishing efforts so as not to be constrained by A-season PSC. At the beginning of the B-season, if the pollock fishery has not yet reached its PSC limit (which closes the Atka mackerel fishery,[1] but not the pollock fishery), the IMS Model assumes that Atka mackerel vessels fish as soon as possible to avoid being closed out by PSC in the pollock fishery.
- Overall, Scenario A will have relatively low overall impacts because PSC apportionment for the pollock fishery will be reduced even though the pollock fishery will continue to be unconstrained and by assumption taking the same amount of PSC as was taken in each Basis Year.

under Scenario B, the status quo Pollock|AtkaM|Other apportionment, like rockfish, is maintained at Basis Year levels. The reasoning behind this assumption is that because the pollock fishery is not constrained by its limit, a reduction in the limit has no real impact with respect to reducing PSC in the

[1] As noted in footnote #53 in the main document this is an incorrect statement. In fact NMS takes no action when the PSC limit for Pollock|Atka Mackerel|Other fisheries is reached. This means that the IMS Model should not have closed the Atka mackerel fishery due to PSC under the status or under any of the option. The primary implication of this error is that negative impacts of the options to the BSAI TLA are slightly reduced, and that the status quo harvests in the Area 4B commercial halibut fishery should be slightly lower—2 net weight mt in an average year.

BSAI TLA fisheries. Therefore, in order to achieve the goal of the limit reduction options—i.e. to reduce halibut PSC—further reductions are imposed on the Pacific cod and yellowfin sole target fisheries. For example when 2013 is the basis year the Pollock|Atka Mackerel|Other apportionment is maintained at 250 mt under both the status quo and Option 2c with a 30 percent PSC limit reduction. Because Pollock|Atka Mackerel|Other is not cut the Pacific cod and yellowfin sole target fisheries must share additional PSC cut of 75 mt (30% of 250mt). Also, under Scenario B, the yellowfin sole and Atka mackerel fisheries are assumed to operate as race-for-fish fisheries.

a. Option 2–Suboption a: Reduce Halibut PSC Limits for the BSAI TLA Fisheries by 10 Percent

Table 16 Statistical Details of the IMS Model Runs for Option 2a): 10 Percent Reduction of PSC Limits for the BSAI TLA Fisheries

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	153	26	-	-	162	25	-	8	12
Change in the Discounted Present Value of Wholesale Revenue from the Status Quo, Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	-	-	-	-	-	($0.02)	-	-	-
Maximum Change in Magnitude of DPV	$2.73	$0.06	$1.66	$4.05	$3.56	$0.24	$2.91	$6.61	($16.30)	($50.40)
Mean Change in DPV	$0.68	$0.02	$0.62	$1.31	$0.71	$0.05	$0.94	$1.70	($5.27)	($15.37)
Standard Deviation of Changes in DPV	$0.83	$0.01	$0.26	$0.92	$0.92	$0.04	$0.43	$1.18	$2.50	$7.64
Median Change in DPV	$0.97	$0.01	$0.61	$1.50	$0.90	$0.04	$0.92	$1.69	($5.09)	($14.75)
Change in Average Annual Halibut (mt) from the Status Quo										
Mean Annual Change in Halibut PSC Mortality (Round Weight mt)	-5.5	-0.1	-6.8	-12.4	-5.6	-0.4	-11.0	-17.0	-12.4	-17.0
Mean Annual Change in Commercial Halibut Catch (Net Weight mt)	2.7	0.1	2.7	5.5	2.9	0.2	4.0	7.1	-	-
Mean Change in DPV (2013$ million) per annual change in halibut (mt)	$0.25	$0.21	$0.23	$0.24	$0.24	$0.22	$0.23	$0.24	$0.43	$0.91

Table 17 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 2a): 10 Percent Reduction of PSC Limits for the BSAI TLA Fisheries

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	2.1	6.1	1.2	9.5	2.9	8.4	1.7	13.0
Average Annual Average over Last 5 years (2019–2023)	0.4	1.2	0.2	1.9	0.6	1.7	0.3	2.6
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.04	$0.11	$0.02	$0.18	$0.06	$0.15	$0.03	$0.24
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	0.8	2.4	0.5	3.7	1.1	3.3	0.7	5.1
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.02	$0.04	$0.01	$0.07	$0.02	$0.06	$0.01	$0.09

Figure 22 **Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 2a): 10 Percent Reduction of PSC Limits for BSAI TLA**

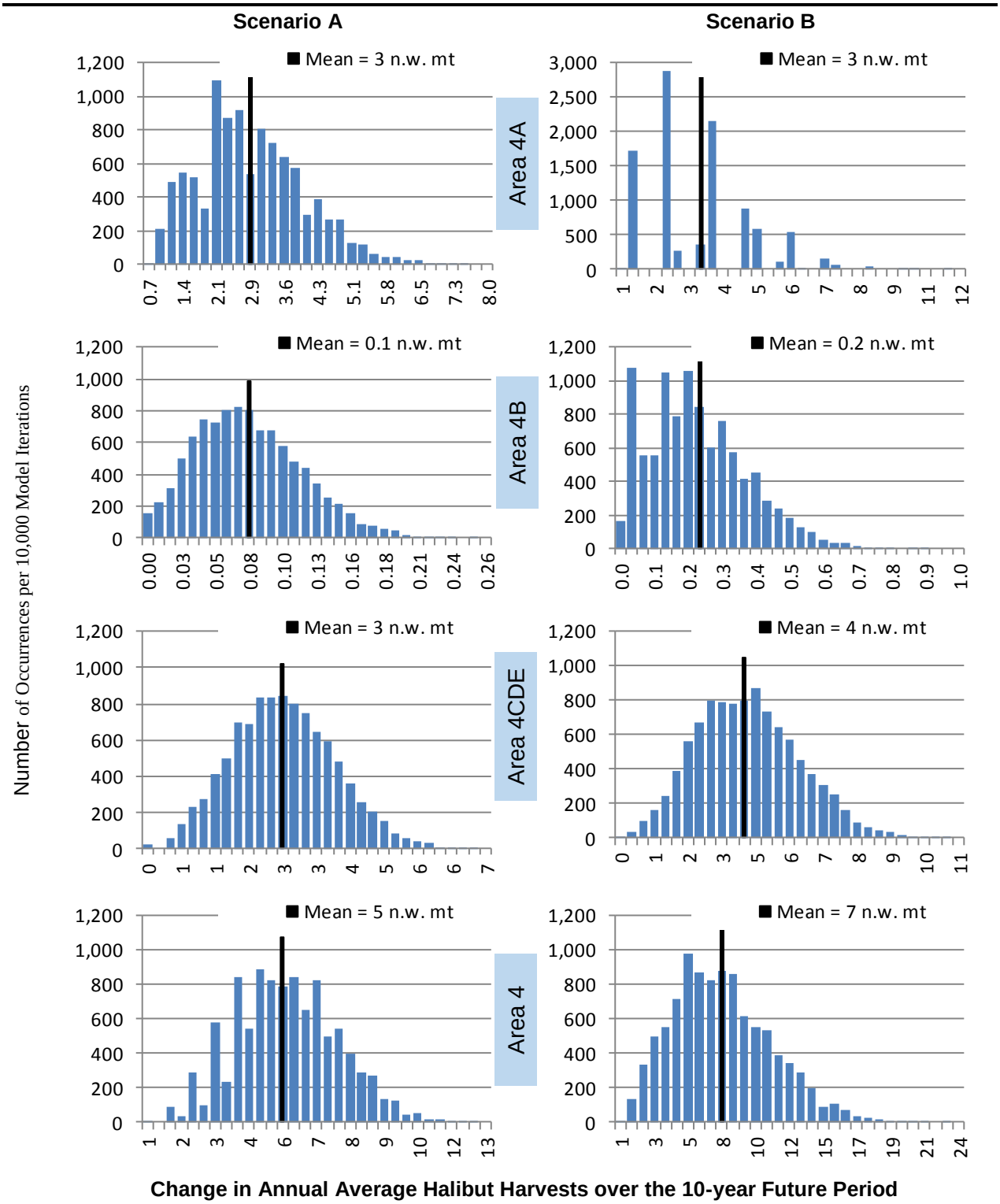


Figure 23 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 2a): 10 Percent Reduction of PSC Limits for BSAI TLA

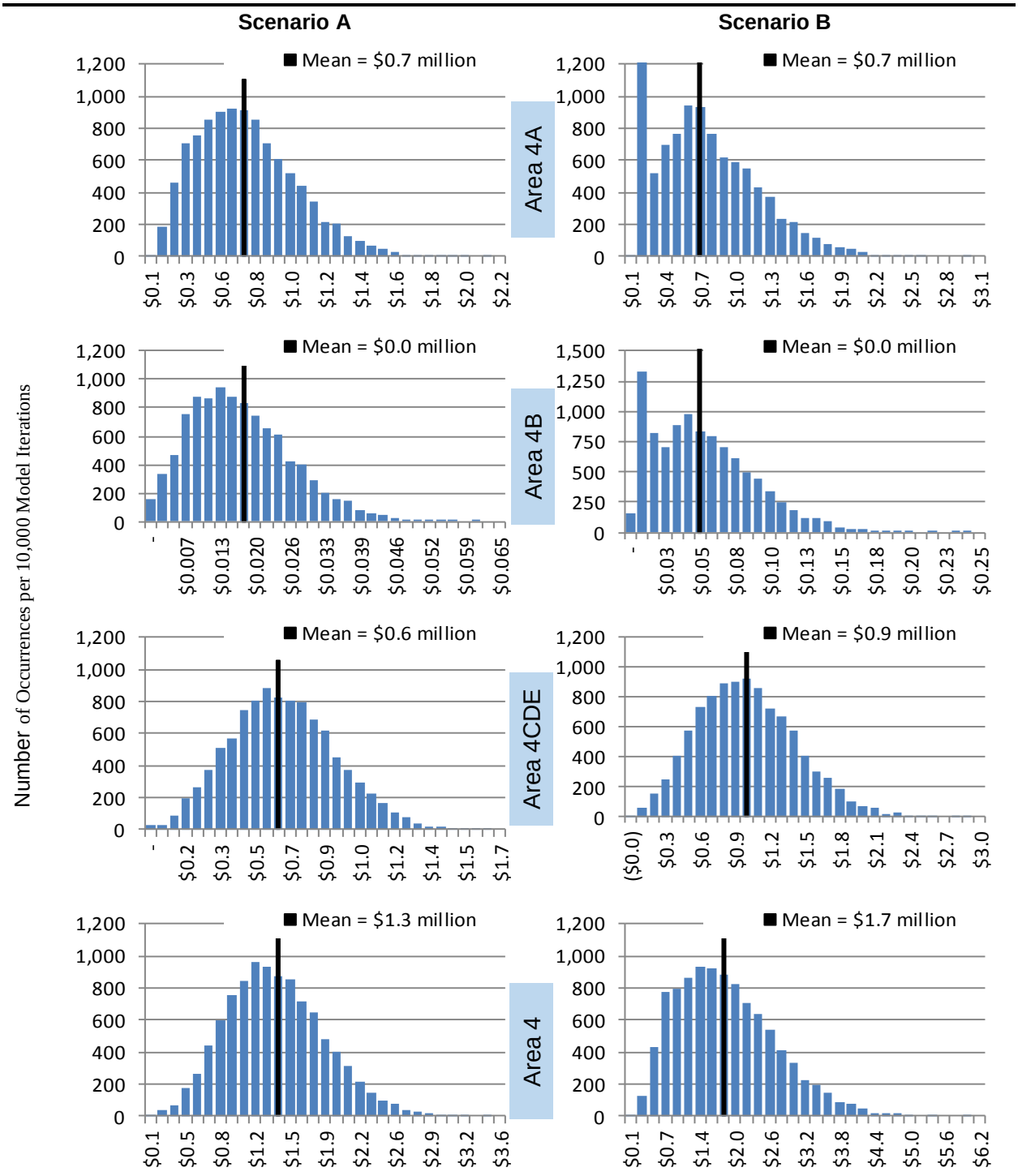
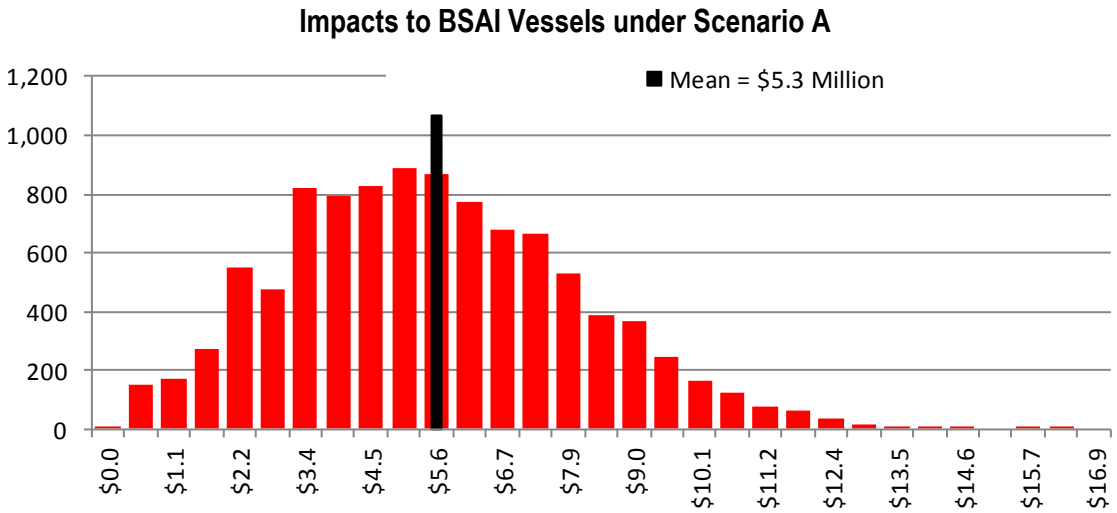
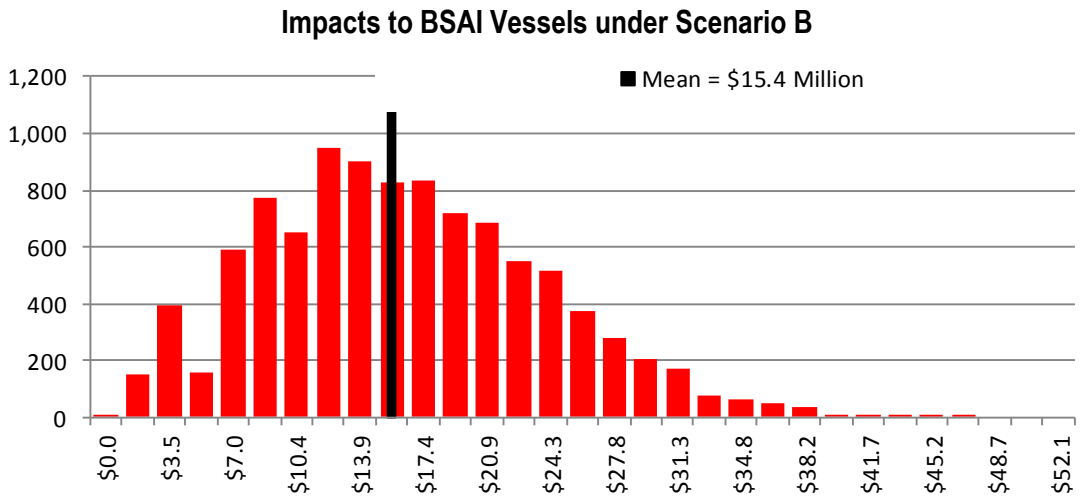
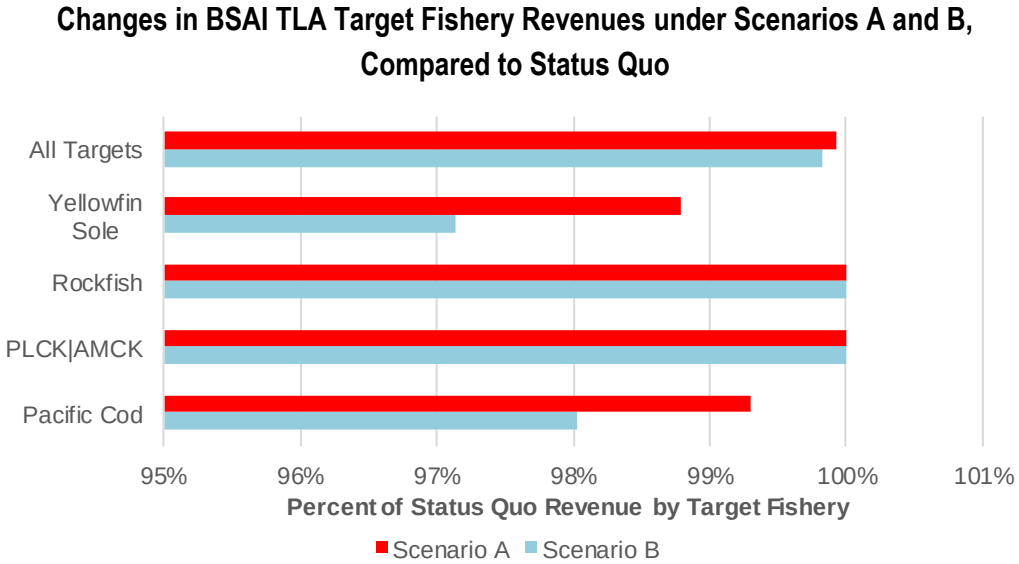


Figure 24 Impacts to BSAI TLA Vessels under Option 2a): 10 Percent Reduction of PSC Limits







b. Option 2–Suboption b: Reduce Halibut PSC Limits for the BSAI TLA Fisheries by 20 Percent

Table 18 Statistical Details of the IMS Model Runs for Option 2b): 20 Percent Reduction of PSC Limits for the BSAI TLA Fisheries

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	163	29	-	-	26	1	-	9	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo, Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	-	-	-	-	-	($0.02)	-	-	($0.42)
Maximum Change in Magnitude of DPV	$5.15	$0.44	$3.29	$8.49	$6.73	$1.30	$4.85	$12.84	($75.99)	($168.73)
Mean Change in DPV	$1.37	$0.09	$1.29	$2.76	$1.61	$0.27	$2.12	$4.00	($22.35)	($58.61)
Standard Deviation of Changes in DPV	$1.06	$0.07	$0.53	$1.47	$1.30	$0.21	$0.69	$1.99	$11.99	$27.25
Median Change in DPV	$1.42	$0.08	$1.27	$2.71	$1.58	$0.24	$2.09	$3.79	($21.49)	($57.13)
Change in Average Annual Halibut (mt) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight (mt))	-12.7	-0.8	-14.1	-27.7	-15.4	-2.6	-23.3	-41.3	-27.7	-41.3
Mean Annual Change in Directed Catch (Net Weight mt)	5.6	0.4	5.5	11.6	6.7	1.2	9.1	17.0	-	-
Mean Change in DPV ($2013 million) per annual change in halibut (mt)	$0.24	$0.23	$0.23	$0.24	$0.24	$0.23	$0.23	$0.24	$0.81	$1.42

Table 19 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 2b): 20 Percent Reduction of PSC Limits for the BSAI TLA Fisheries

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	4.7	13.5	2.7	20.8	6.9	19.9	3.9	30.7
Average Annual Average over Last 5 years (2019–2023)	0.9	2.7	0.5	4.2	1.4	4.0	0.8	6.1
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.09	$0.25	$0.05	$0.39	$0.14	$0.36	$0.08	$0.58
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	1.8	5.3	1.0	8.2	2.7	7.9	1.5	12.1
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.03	$0.09	$0.02	$0.15	$0.05	$0.14	$0.03	$0.22

Figure 25 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 2b): 20 Percent Reduction of PSC Limits for BSAI TLA

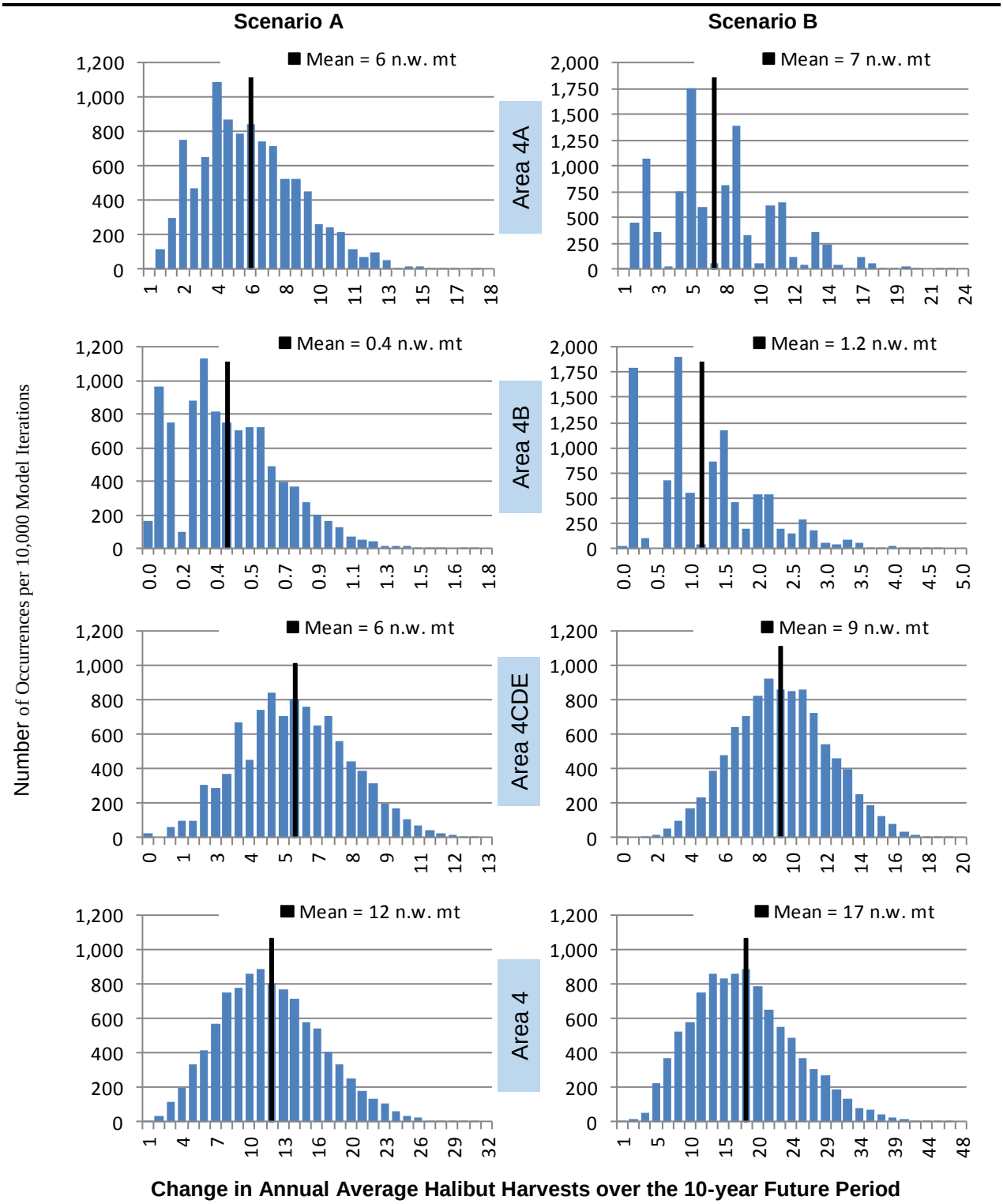


Figure 26 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 2b): 20 Percent Reduction of PSC Limits for BSAI TLA

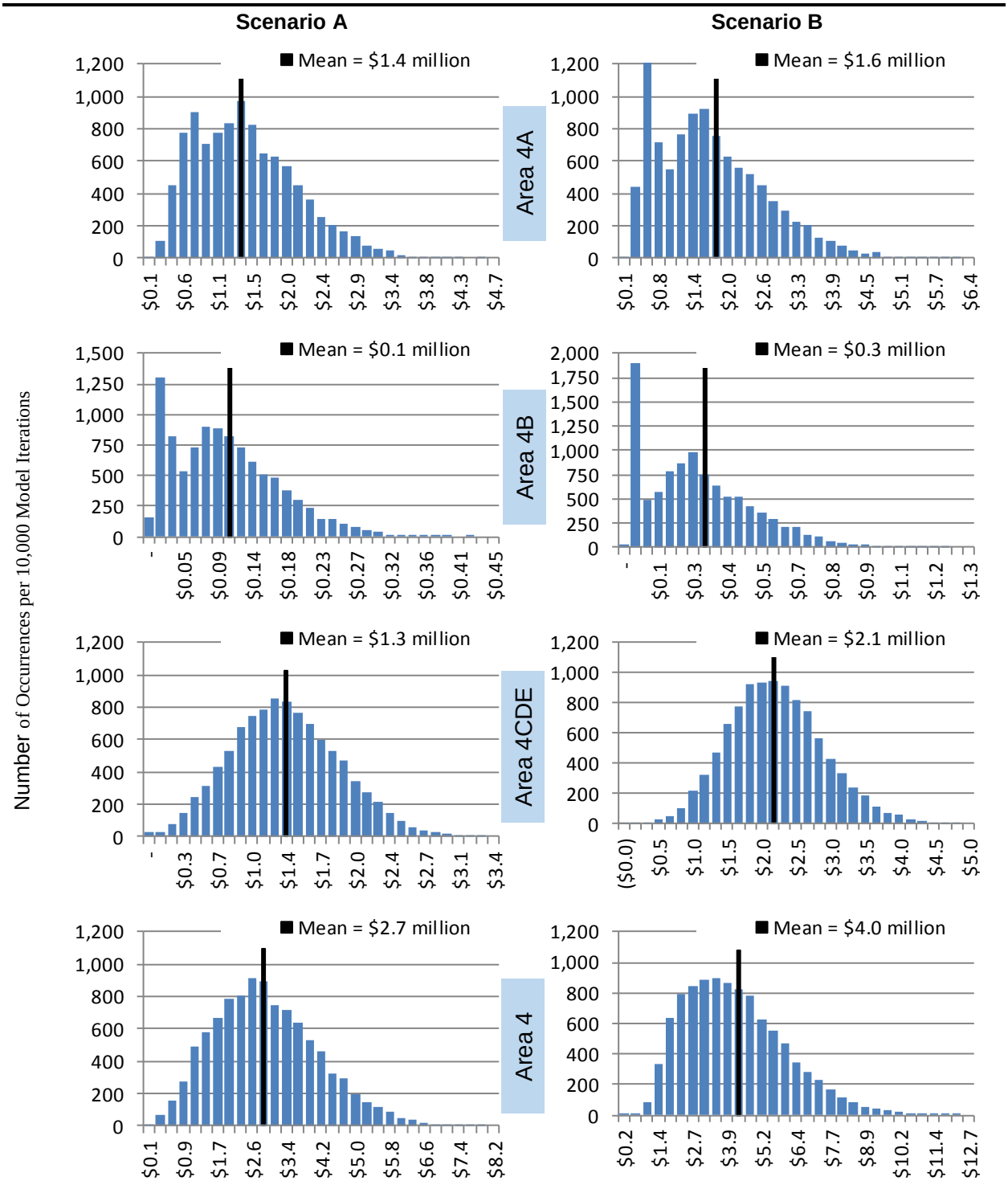
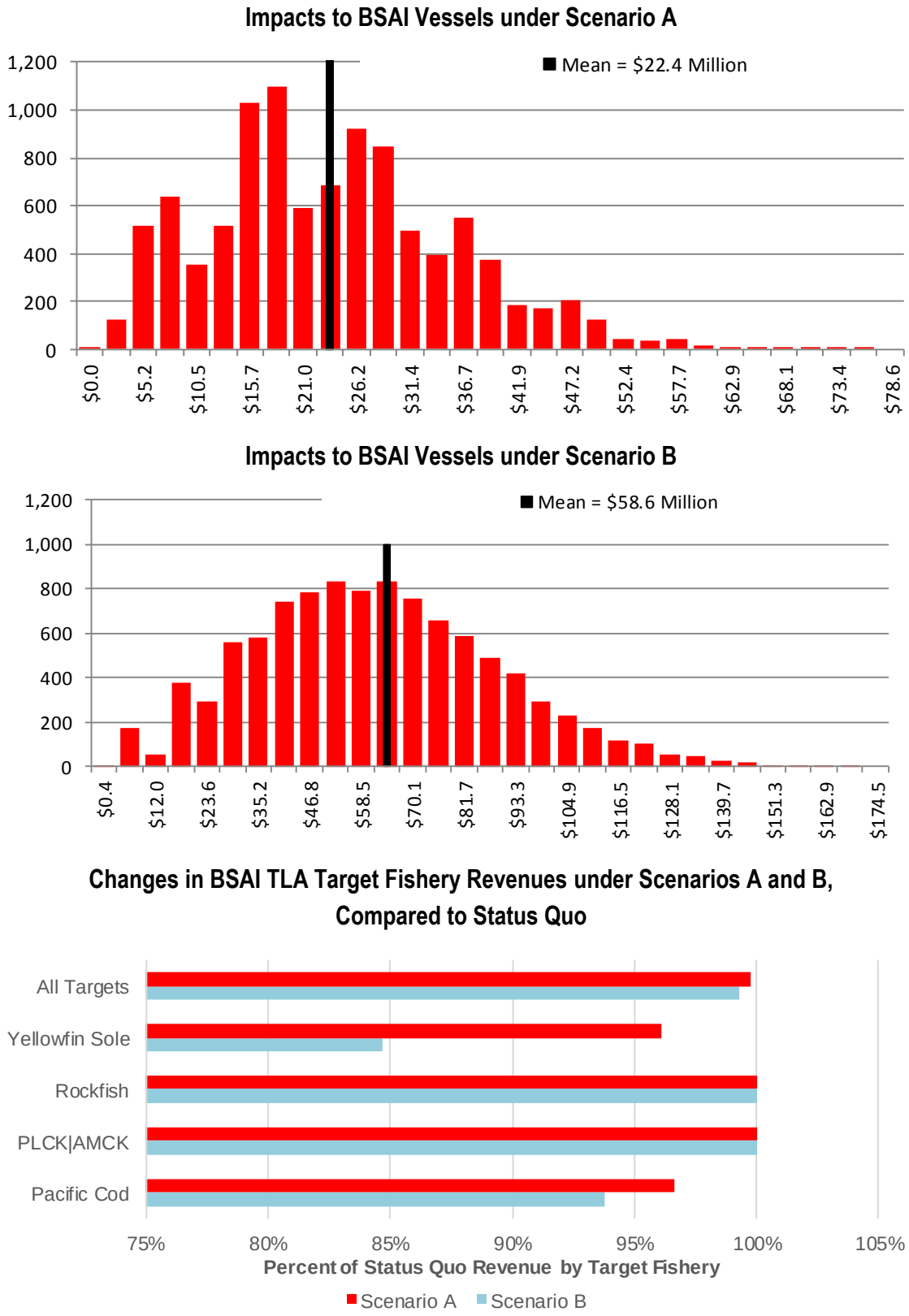


Figure 27 Impacts to BSAI TLA Vessels under Option 2b): 20 Percent Reduction of PSC Limits



c. Option 2–Suboption c: Reduce Halibut PSC Limits for the BSAI TLA Fisheries by 30 Percent

Table 20 Statistical Details of the IMS Model Runs for Option 2c): 30 Percent Reduction of PSC Limits for the BSAI TLA Fisheries

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Prseent Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$0.01	$0.00	-	-	$0.00	$0.41	-	($9.23)	($6.35)
Maximum Change in Magnitude of DPV	$7.59	$1.31	$4.36	$12.73	$11.01	$1.75	$8.04	$20.79	($163.06)	($280.97)
Mean Change in DPV	$2.75	$0.39	$1.79	$4.93	$3.34	$0.45	$3.50	$7.29	($58.77)	($110.33)
Standard Deviation of Changes in DPV	$1.33	$0.22	$0.70	$2.01	$1.71	$0.27	$1.08	$2.87	$23.41	$42.18
Median Change in DPV	$2.70	$0.37	$1.76	$4.75	$3.17	$0.41	$3.44	$6.98	($57.03)	($107.86)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-26.0	-4.0	-19.9	-49.9	-33.6	-4.4	-38.1	-76.1	-49.9	-76.1
Mean Annual Change in Directed Catch (Net Weight MT)	11.5	1.7	7.6	20.8	14.1	1.9	14.9	30.9	-	-
Mean Change in DPV (2013$ million) per annual change in halibut (mt)	$0.24	$0.23	$0.23	$0.24	$0.24	$0.23	$0.23	$0.24	$1.18	$1.45

Table 21 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 2c): 30 Percent Reduction of PSC Limits for the BSAI TLA Fisheries

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	8.2	23.7	4.7	36.5	12.8	37.0	7.3	57.1
Average Annual Average over Last 5 years (2019–2023)	1.6	4.7	0.9	7.3	2.6	7.4	1.5	11.4
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.16	$0.43	$0.09	$0.69	$0.26	$0.68	$0.14	$1.08
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	3.2	9.3	1.8	14.4	5.0	14.6	2.9	22.5
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.06	$0.16	$0.03	$0.26	$0.10	$0.25	$0.05	$0.40

Figure 28 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 2c): 30 Percent Reduction of PSC Limits for BSAI TLA

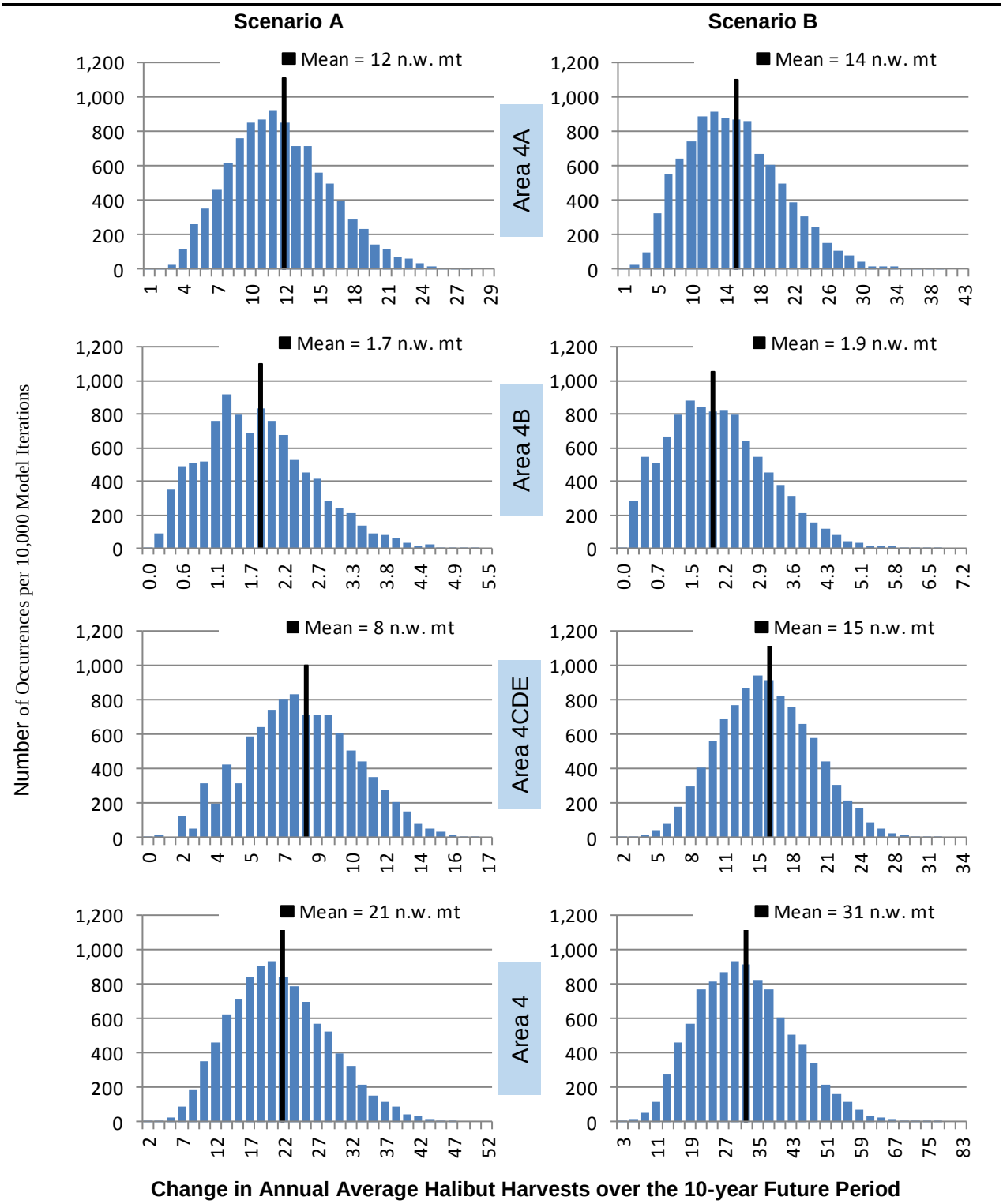


Figure 29 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 2c): 30 Percent Reduction of PSC Limits for BSAI TLA

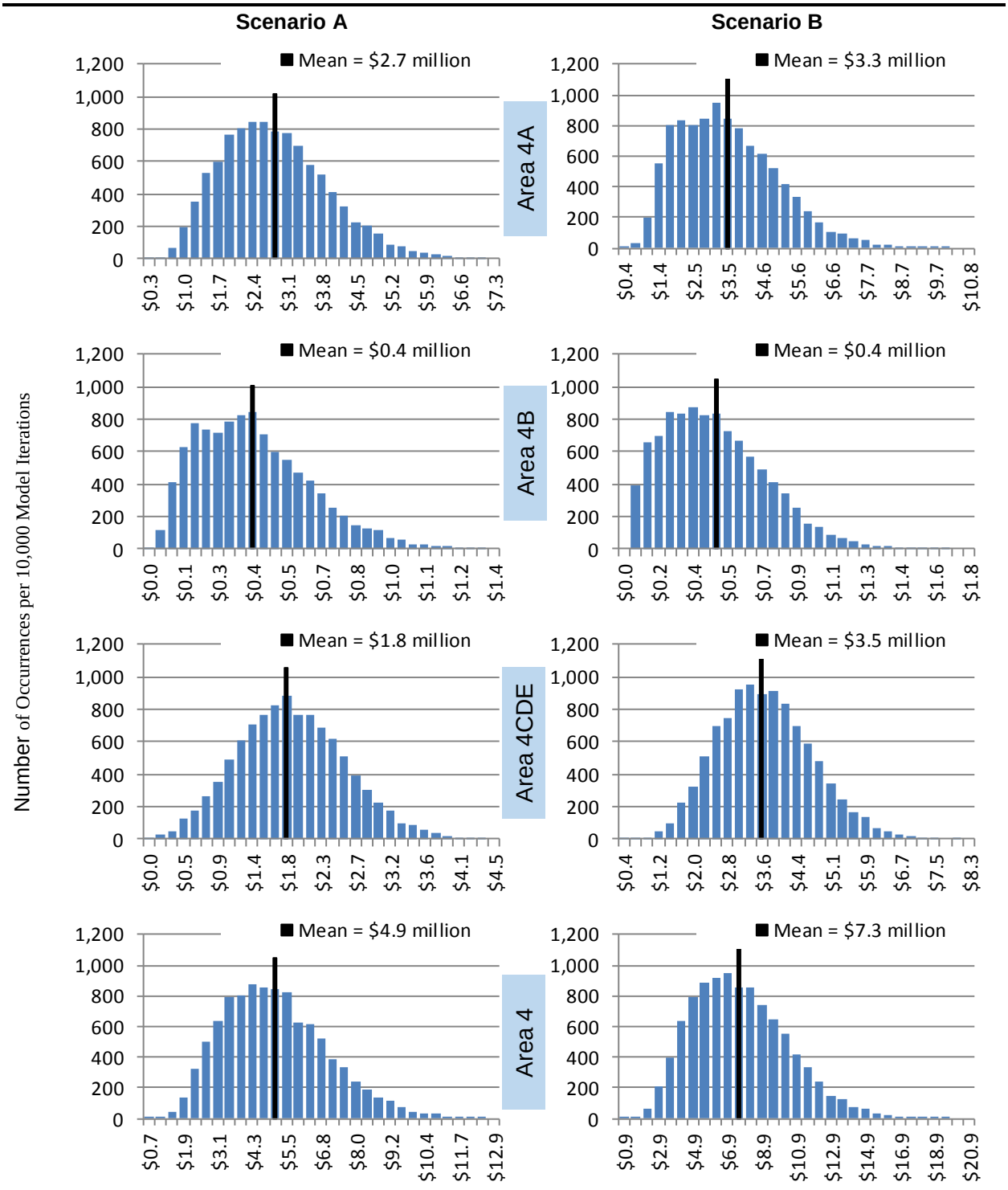
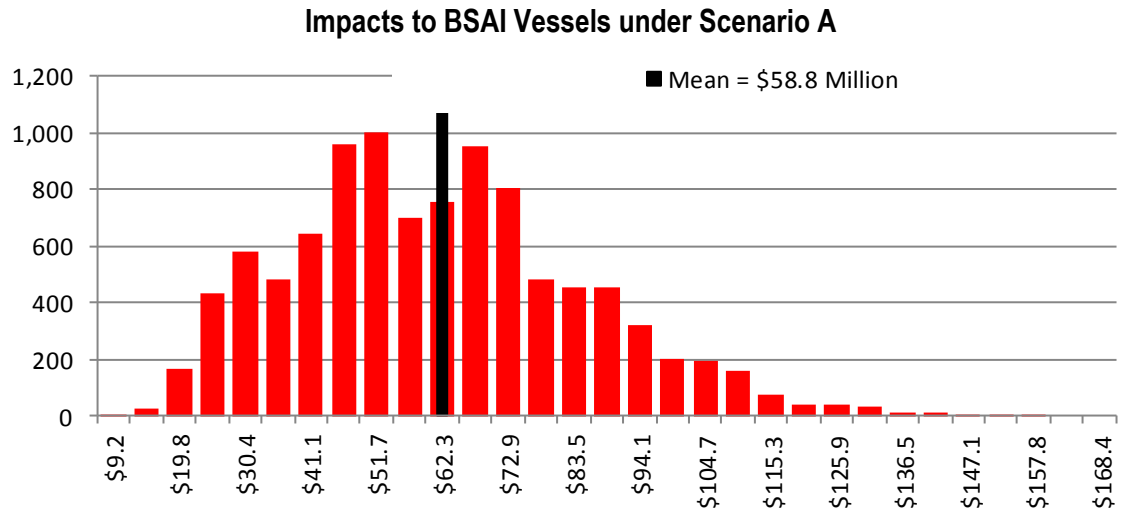
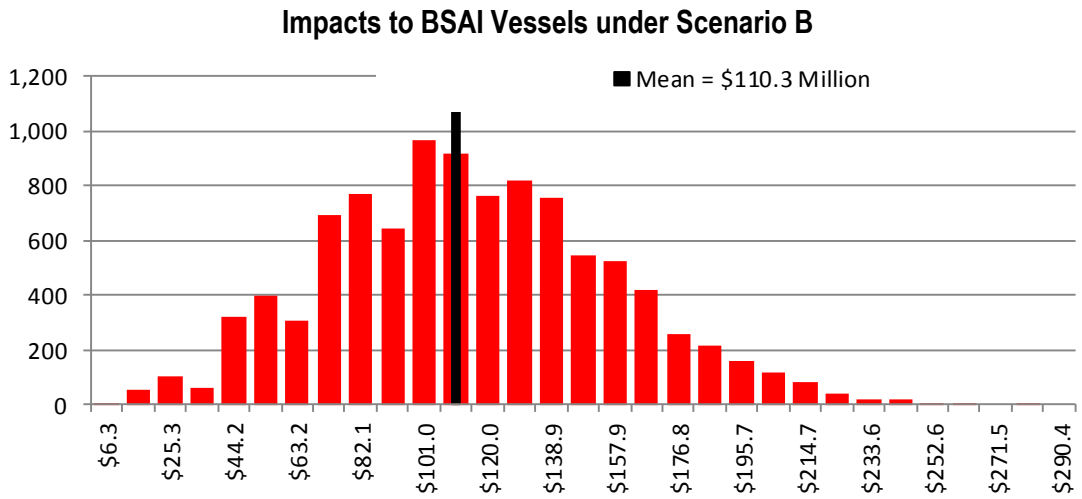
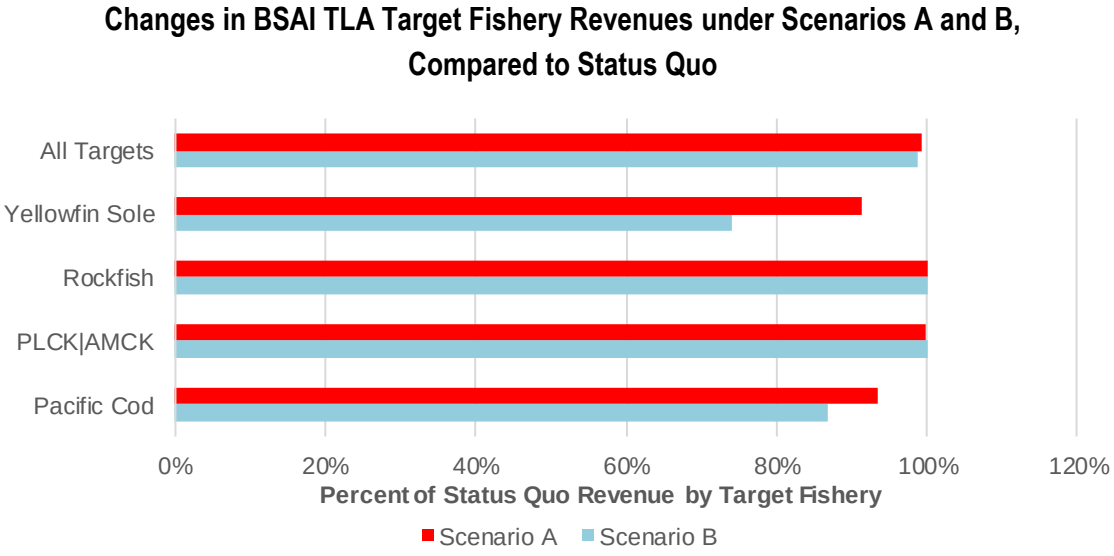


Figure 30 Impacts to BSAI TLA Vessels under Option 2c): 30 Percent Reduction of PSC Limits







d. Option 2–Suboption d: Reduce Halibut PSC Limits for the BSAI TLA Fisheries by 35 Percent

Table 22 Statistical Details of the IMS Model Runs for Option 2d): 35 Percent Reduction of PSC Limits for the BSAI TLA Fisheries

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$0.00	$0.00	-	-	$0.03	$2.14	-	($9.85)	($38.43)
Maximum Change in Magnitude of DPV	$10.17	$1.77	$5.38	$17.32	$14.50	$2.15	$9.23	$25.87	($195.94)	($334.53)
Mean Change in DPV	$3.19	$0.46	$2.17	$5.81	$4.76	$0.60	$4.43	$9.80	($72.67)	($161.55)
Standard Deviation of Changes in DPV	$1.58	$0.26	$0.84	$2.41	$1.92	$0.29	$1.02	$3.09	$28.91	$46.09
Median Change in DPV	$3.07	$0.42	$2.14	$5.58	$4.55	$0.57	$4.33	$9.41	($70.62)	($159.60)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-30.6	-4.6	-24.3	-59.6	-48.4	-5.9	-47.1	-101.5	-59.6	-101.5
Mean Annual Change in Directed Catch (Net Weight MT)	13.3	2.0	9.2	24.6	20.1	2.6	18.9	41.5	-	-
Mean Change in DPV (2013$ million) per annual change in halibut (mt)	$0.24	$0.23	$0.23	$0.24	$0.24	$0.23	$0.24	$0.24	$1.22	$1.59

Table 23 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 2d): 35 Percent Reduction of PSC Limits for the BSAI TLA Fisheries

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	10.0	28.9	5.7	44.6	17.0	49.1	9.7	75.8
Average Annual Average over Last 5 years (2019–2023)	2.0	5.8	1.1	8.9	3.4	9.8	1.9	15.2
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.20	$0.53	$0.11	$0.84	$0.34	$0.90	$0.19	$1.43
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	3.9	11.4	2.2	17.5	6.7	19.3	3.8	29.8
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.07	$0.20	$0.04	$0.31	$0.13	$0.33	$0.07	$0.53

Figure 31 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 2d): 35 Percent Reduction of PSC Limits for BSAI TLA

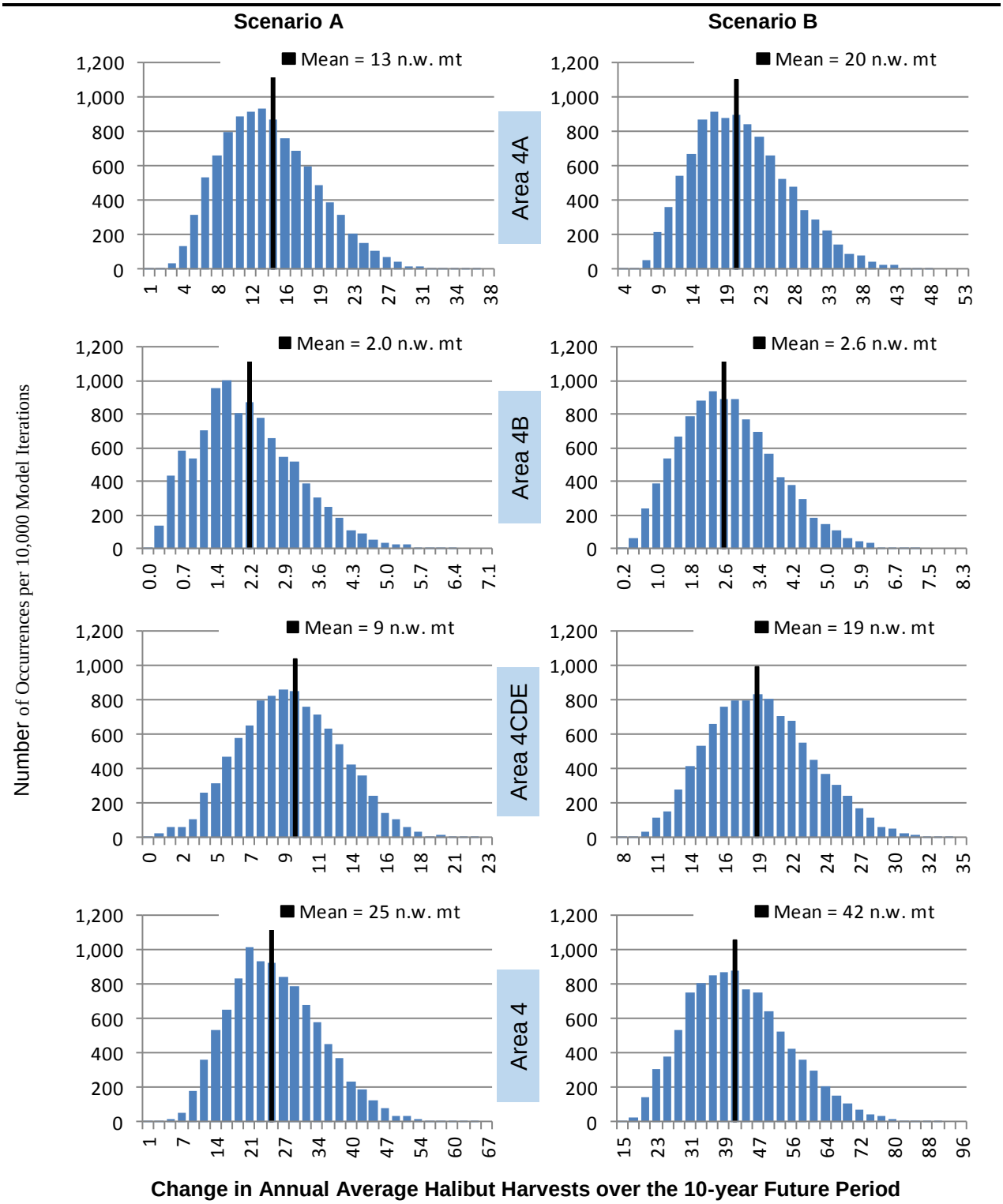


Figure 32 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 2d): 35 Percent Reduction of PSC Limits for BSAI TLA

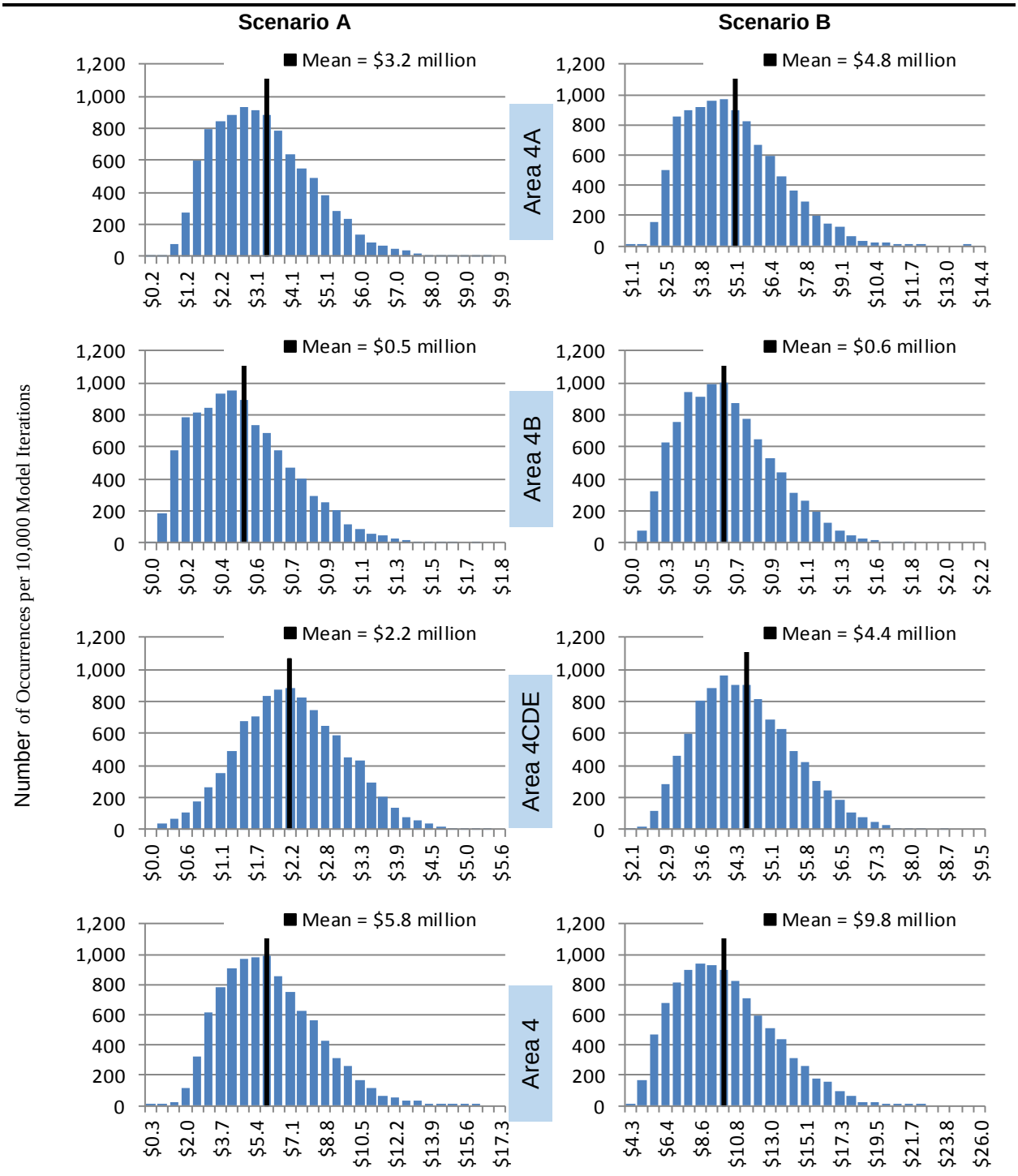
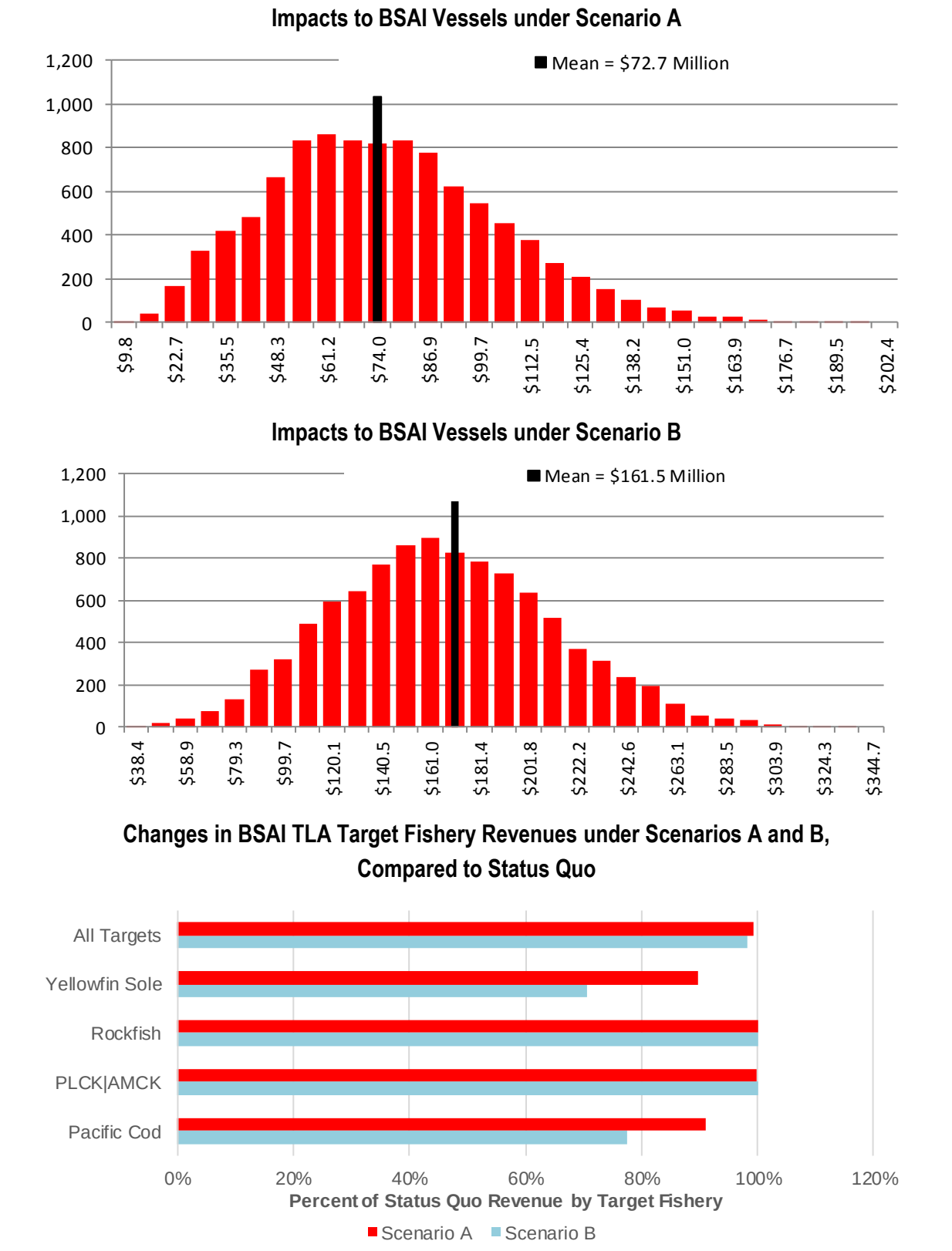


Figure 33 Impacts to BSAI TLA Vessels under Option 2d): 35 Percent Reduction of PSC Limits



e. Option 2–Suboption e: Reduce Halibut PSC Limits for the BSAI TLA Fisheries by 40 Percent

Table 24 Statistical Details of the IMS Model Runs for Option 2e): 40 Percent Reduction of PSC Limits for the BSAI TLA Fisheries

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$0.02	$0.02	-	-	$0.05	$2.77	-	($19.08)	($57.58)
Maximum Change in Magnitude of DPV	$10.69	$1.56	$5.87	$17.24	$15.08	$1.88	$9.91	$26.71	($209.50)	($393.26)
Mean Change in DPV	$4.34	$0.51	$2.52	$7.36	$5.94	$0.77	$5.73	$12.43	($91.19)	($208.21)
Standard Deviation of Changes in DPV	$1.71	$0.26	$0.97	$2.64	$2.23	$0.29	$1.12	$3.46	$32.35	$49.40
Median Change in DPV	$4.17	$0.48	$2.49	$7.06	$5.68	$0.74	$5.66	$12.03	($89.78)	($207.44)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-42.4	-5.1	-28.3	-75.8	-61.4	-7.5	-60.6	-129.5	-75.8	-129.5
Mean Annual Change in Directed Catch (Net Weight MT)	18.4	2.2	10.8	31.4	25.1	3.3	24.4	52.8	-	-
Mean Change in DPV ($2013 million) per annual change in halibut (mt)	$0.24	$0.23	$0.23	$0.23	$0.24	$0.23	$0.23	$0.24	$1.20	$1.61

Table 25 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 2e): 40 Percent Reduction of PSC Limits for the BSAI TLA Fisheries

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	12.6	36.5	7.2	56.2	21.4	61.9	12.2	95.5
Average Annual Average over Last 5 years (2019–2023)	2.5	7.3	1.4	11.2	4.3	12.4	2.4	19.1
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.25	$0.67	$0.14	$1.06	$0.43	$1.13	$0.24	$1.80
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	5.0	14.3	2.8	22.1	8.4	24.3	4.8	37.6
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.09	$0.25	$0.05	$0.39	$0.16	$0.42	$0.09	$0.67

Figure 34 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 2e): 40 Percent Reduction of PSC Limits for BSAI TLA

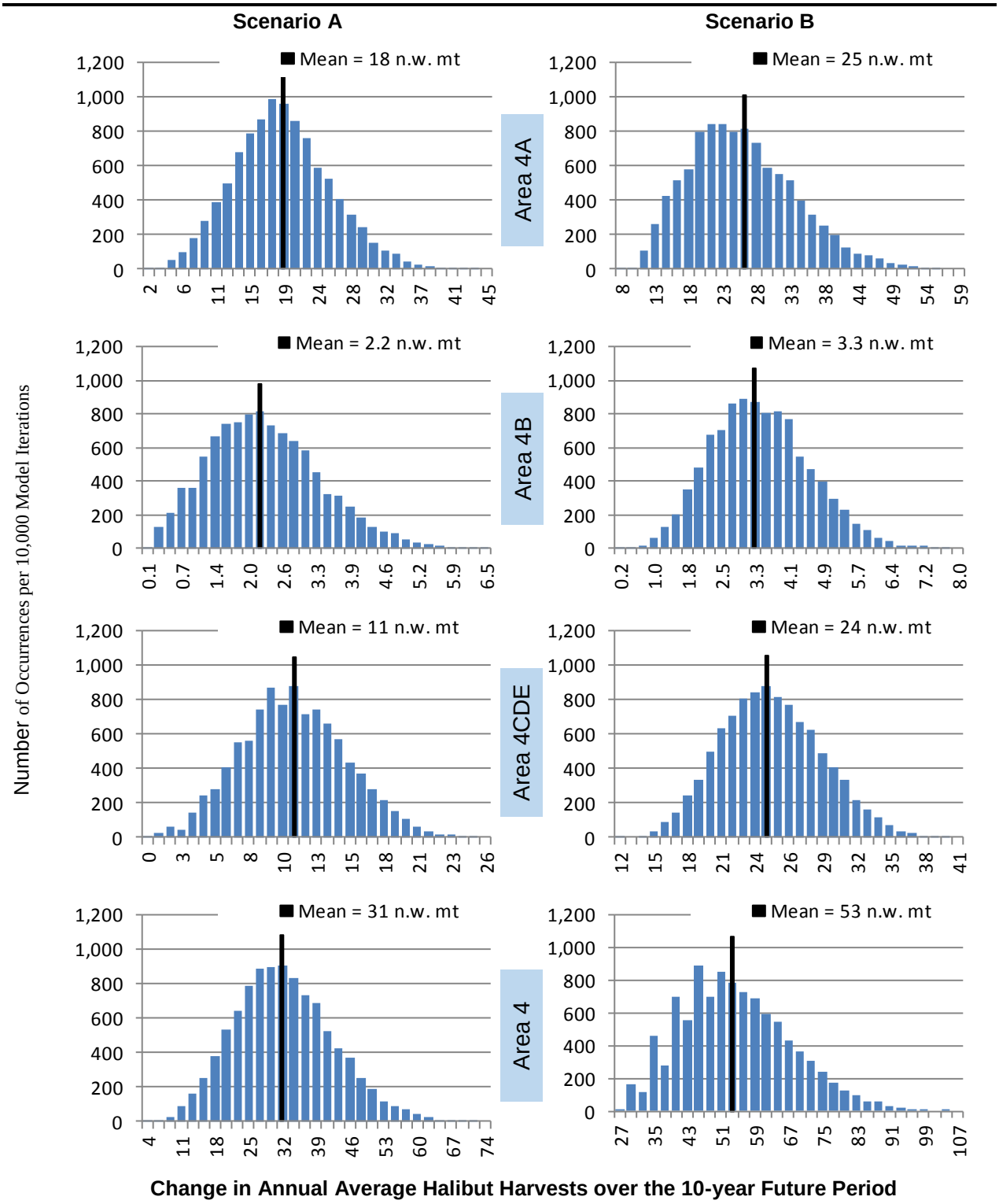


Figure 35 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 2e): 40 Percent Reduction of PSC Limits for BSAI TLA

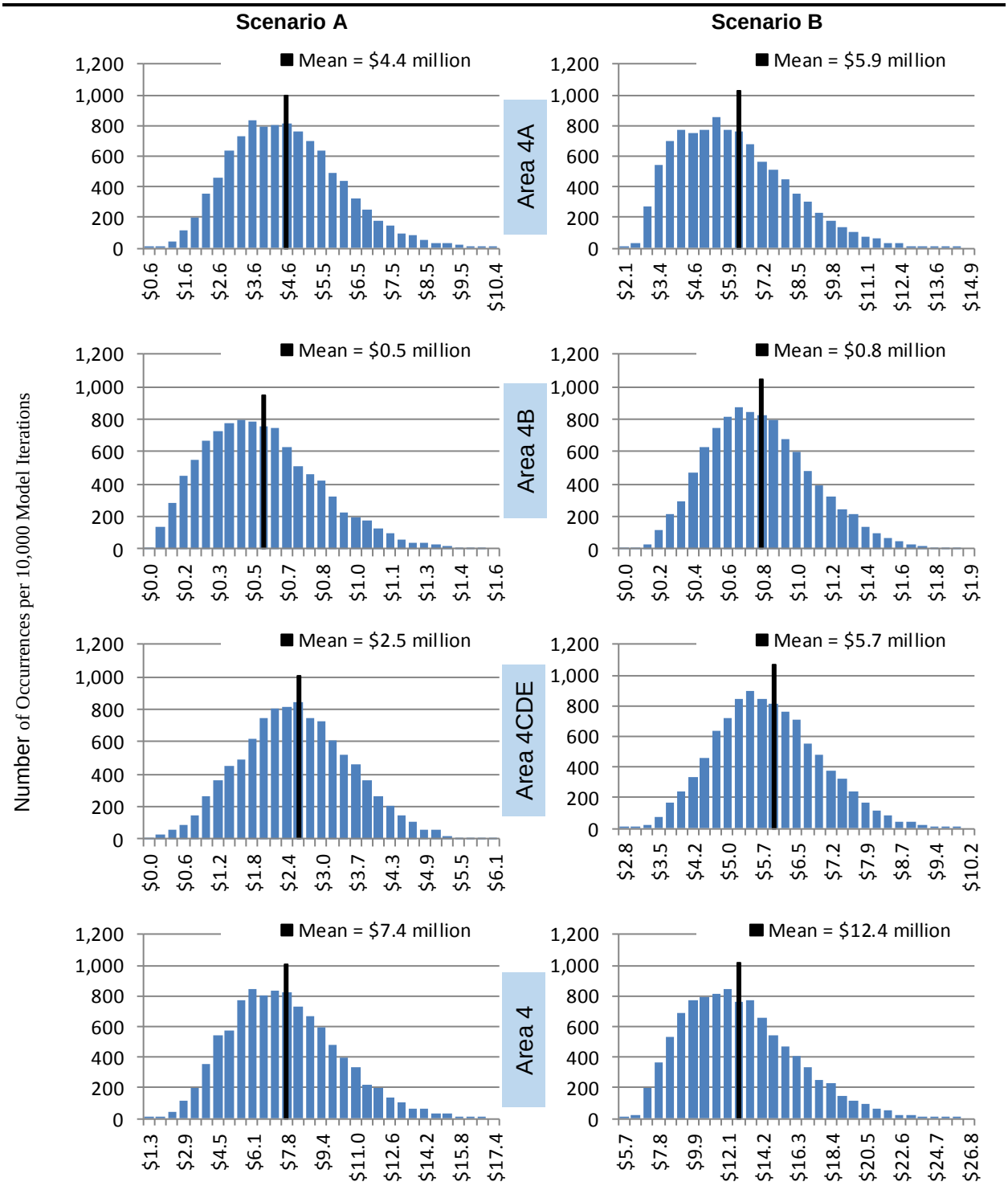
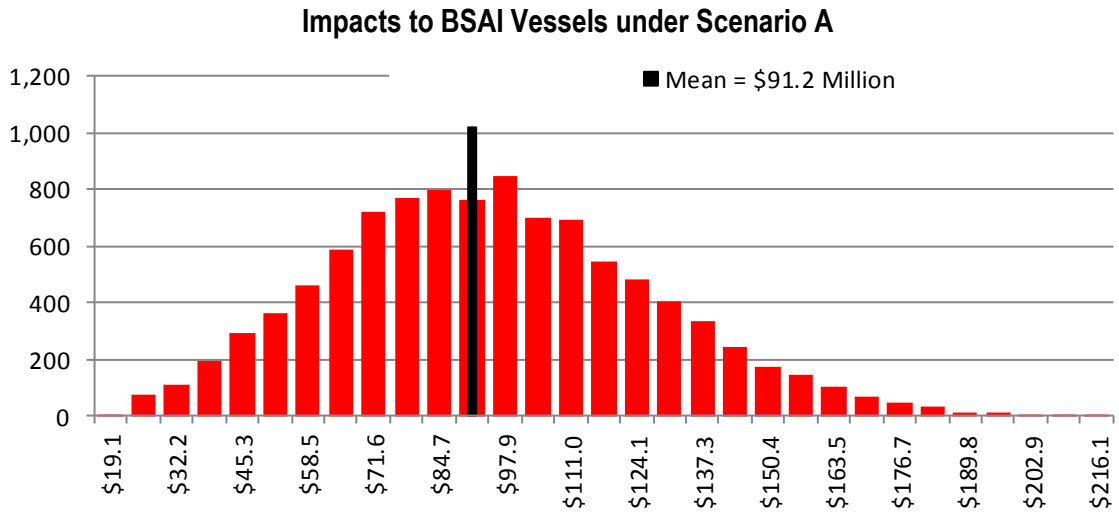
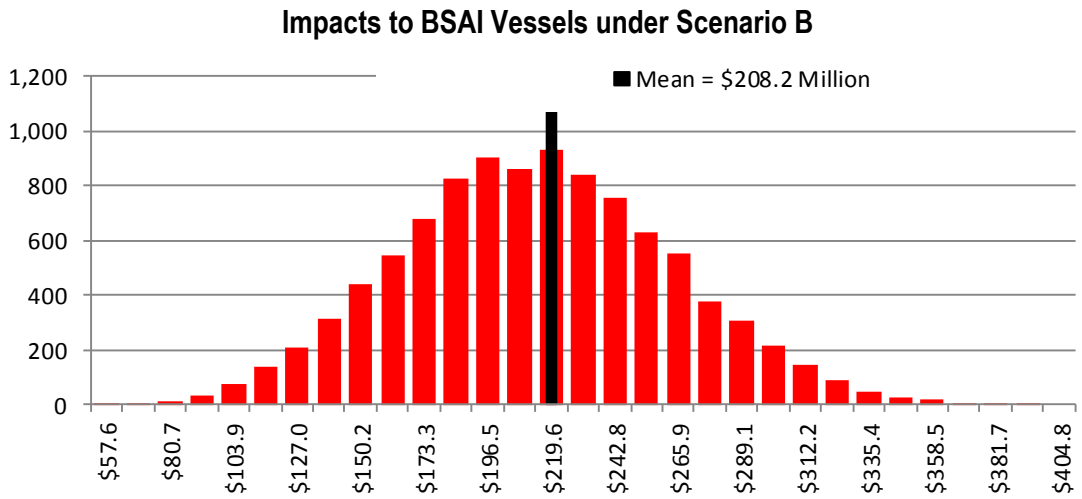
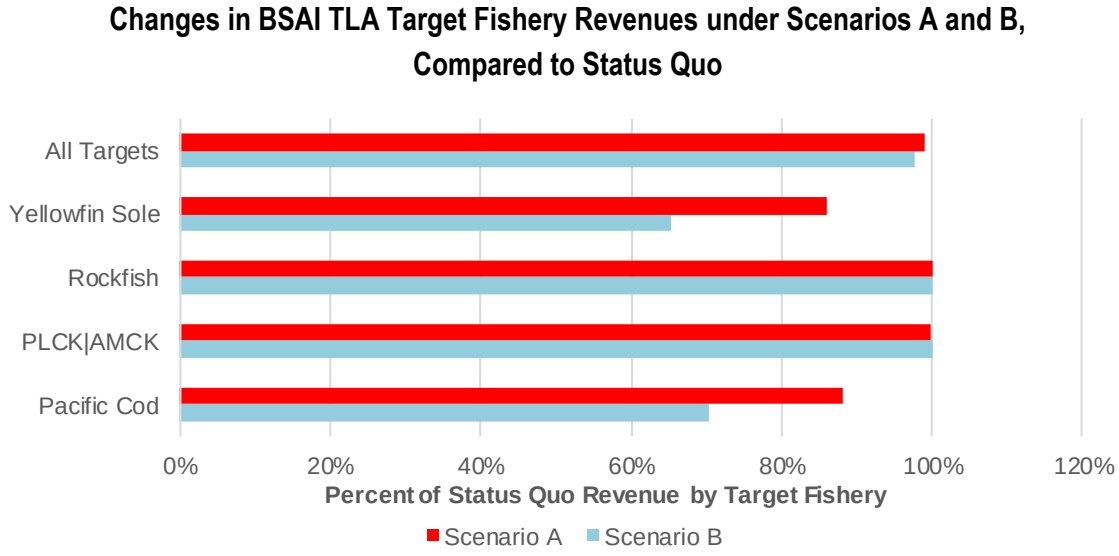


Figure 36 Impacts to BSAI TLA Vessels under Option 2e): 40 Percent Reduction of PSC Limits







f. Option 2–Suboption f: Reduce Halibut PSC Limits for the BSAI TLA Fisheries by 45 Percent

Table 26 Statistical Details of the IMS Model Runs for Option 2f): 45 Percent Reduction of PSC Limits for the BSAI TLA Fisheries

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$0.02	$0.38	-	-	$0.09	$4.21	-	($21.55)	($82.78)
Maximum Change in Magnitude of DPV	$14.42	$1.85	$7.66	$23.80	$18.10	$2.32	$13.60	$34.02	($250.65)	($440.48)
Mean Change in DPV	$5.25	$0.59	$3.22	$9.06	$7.07	$0.87	$8.03	$15.97	($109.66)	($261.24)
Standard Deviation of Changes in DPV	$1.92	$0.27	$1.07	$3.02	$2.41	$0.31	$1.27	$3.73	$36.04	$53.44
Median Change in DPV	$5.09	$0.57	$3.16	$8.70	$6.79	$0.84	$7.99	$15.55	($108.31)	($260.91)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-52.3	-6.0	-35.2	-93.5	-73.3	-8.2	-83.5	-164.9	-93.5	-164.9
Mean Annual Change in Directed Catch (Net Weight MT)	22.2	2.6	13.7	38.4	29.9	3.8	34.2	67.9	-	-
Mean Change in DPV (2013$ million) per annual change in halibut (mt)	$0.24	$0.23	$0.23	$0.24	$0.24	$0.23	$0.23	$0.24	$1.17	$1.58

Table 27 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 2f): 45 Percent Reduction of PSC Limits for the BSAI TLA Fisheries

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	15.5	44.9	8.8	69.2	27.3	79.0	15.5	121.8
Average Annual Average over Last 5 years (2019–2023)	3.1	9.0	1.8	13.8	5.5	15.8	3.1	24.4
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.31	$0.82	$0.17	$1.30	$0.54	$1.44	$0.31	$2.30
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	6.1	17.7	3.5	27.3	10.7	30.9	6.1	47.7
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.12	$0.31	$0.06	$0.49	$0.20	$0.54	$0.11	$0.85

Figure 37 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 2f): 45 Percent Reduction of PSC Limits for BSAI TLA

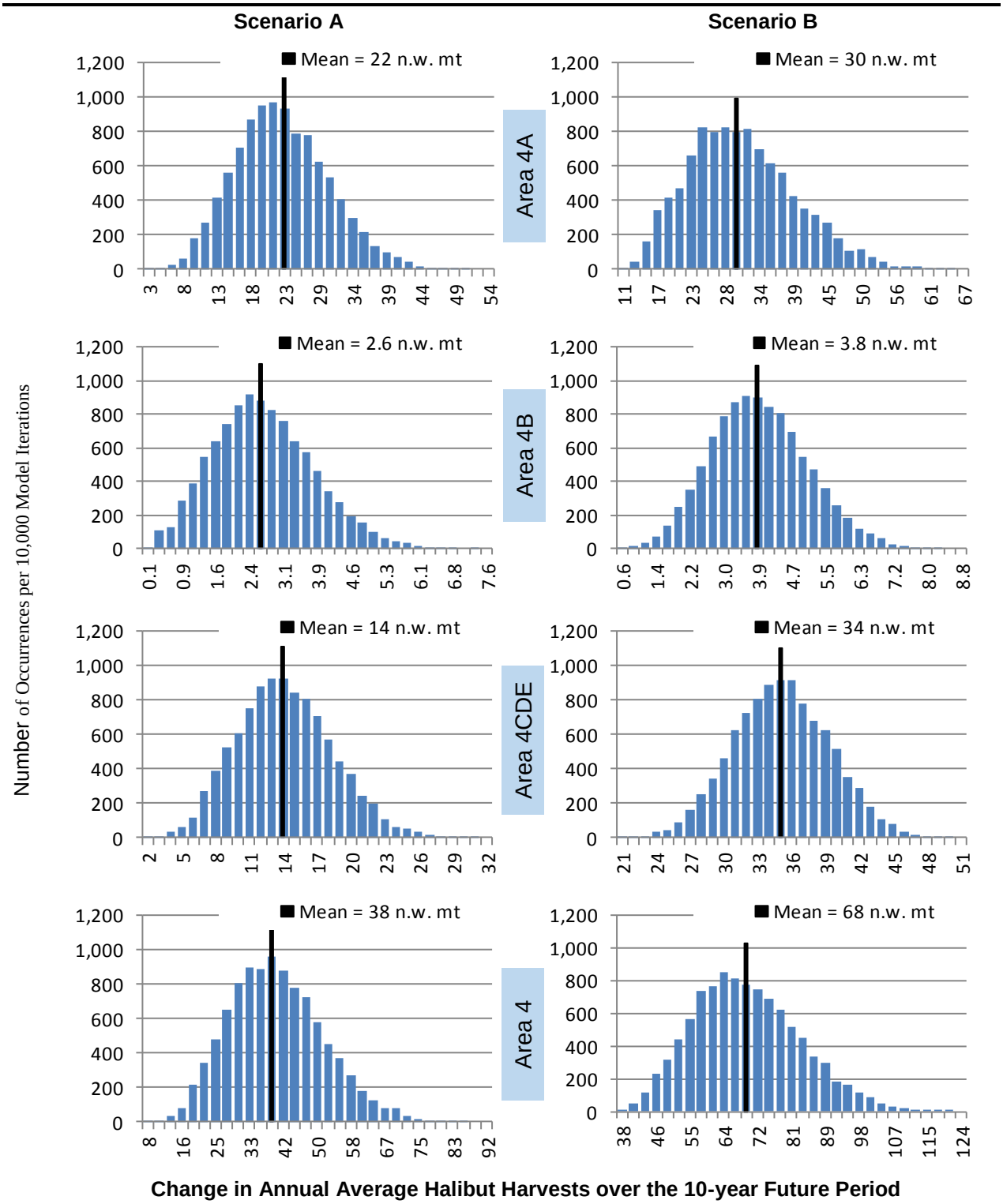


Figure 38 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 2f): 45 Percent Reduction of PSC Limits for BSAI TLA

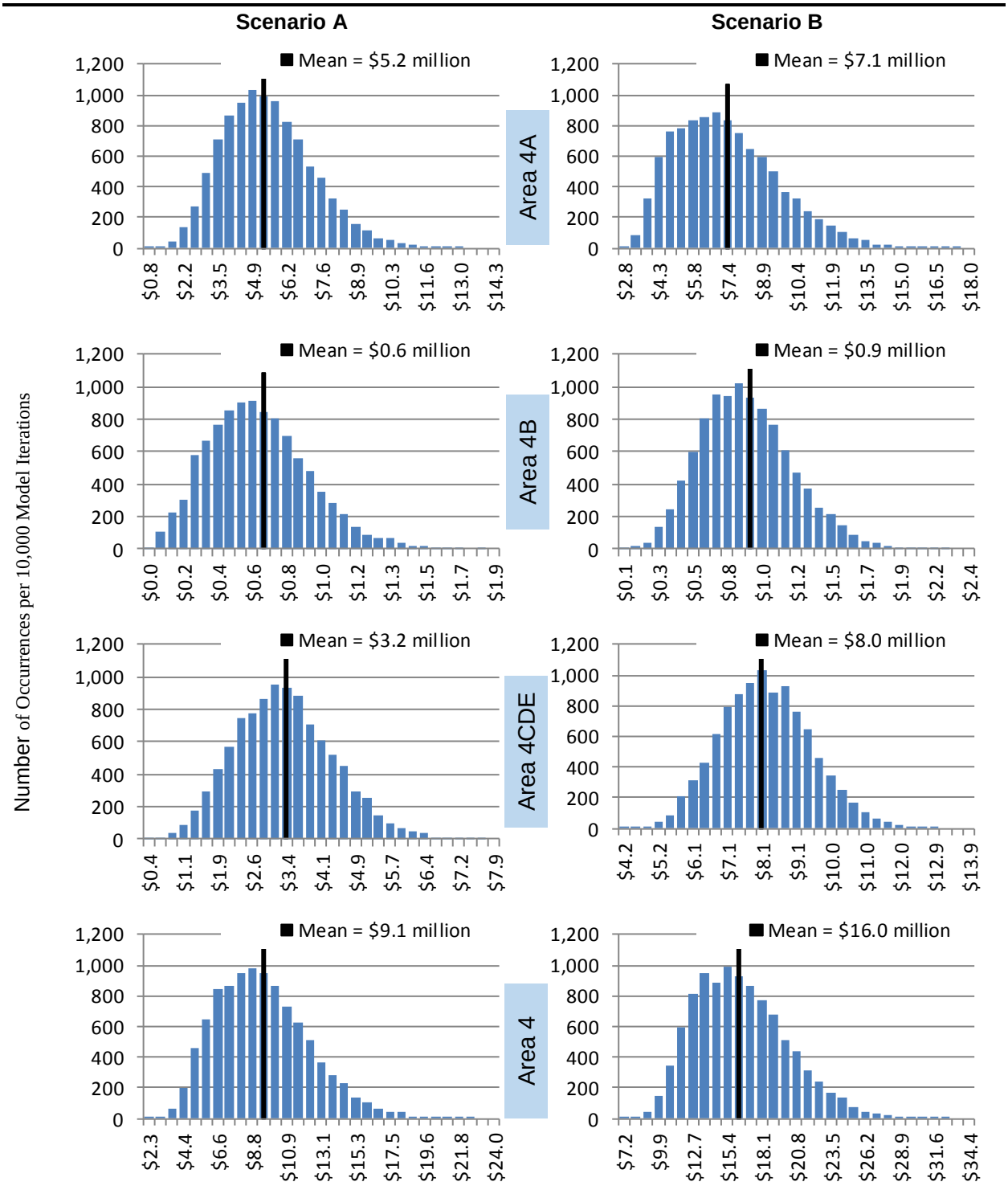
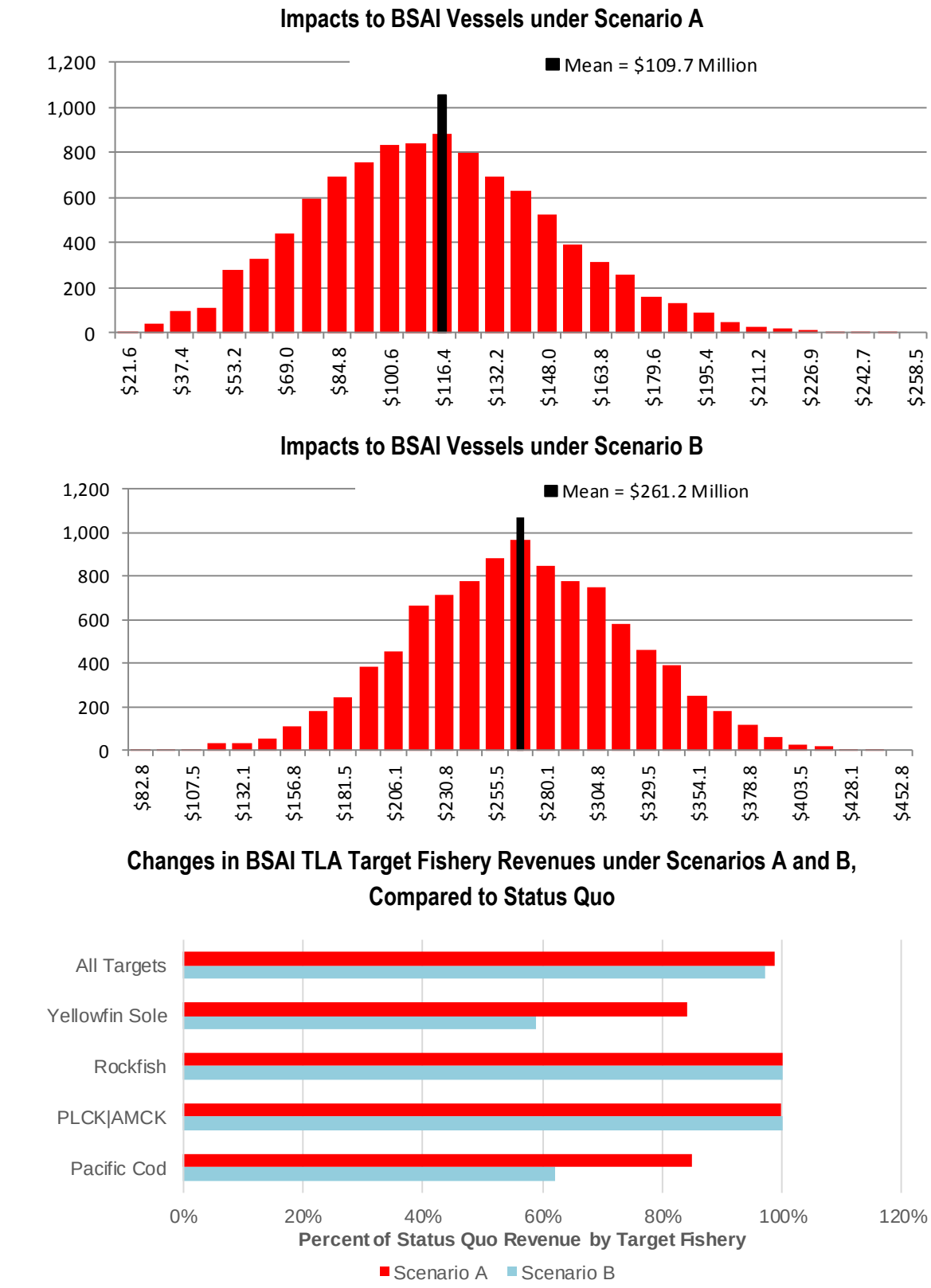


Figure 39 Impacts to BSAI TLA Vessels under Option 2f): 45 Percent Reduction of PSC Limits



g. Option 2–Suboption g: Reduce Halibut PSC Limits for the BSAI TLA Fisheries by 50 Percent

Table 28 Statistical Details of the IMS Model Runs for Option 2g): 50 Percent Reduction of PSC Limits for the BSAI TLA Fisheries

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$0.05	$0.73	-	-	$0.13	$6.14	-	($41.02)	($115.89)
Maximum Change in Magnitude of DPV	$15.83	$2.01	$8.13	$25.75	$20.85	$2.30	$14.94	$37.16	($305.34)	($545.19)
Mean Change in DPV	$6.36	$0.74	$3.99	$11.09	$8.33	$1.04	$10.21	$19.58	($152.96)	($321.80)
Standard Deviation of Changes in DPV	$2.10	$0.29	$1.09	$3.18	$2.71	$0.31	$1.33	$4.01	$37.81	$58.38
Median Change in DPV	$6.14	$0.71	$3.96	$10.71	$8.06	$1.02	$10.17	$19.23	($151.38)	($321.85)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-63.9	-7.4	-43.0	-114.2	-86.3	-9.8	-105.3	-201.4	-114.2	-201.4
Mean Annual Change in Directed Catch (Net Weight MT)	26.8	3.2	17.0	47.1	35.2	4.5	43.4	83.1	-	-
Mean Change in DPV ($2013 million) per annual change in halibut (mt)	$0.24	$0.23	$0.23	$0.24	$0.24	$0.23	$0.24	$0.24	$1.34	$1.60

Table 29 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 2g): 50 Percent Reduction of PSC Limits for the BSAI TLA Fisheries

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	18.8	54.5	10.7	84.1	32.8	94.8	18.7	146.3
Average Annual Average over Last 5 years (2019–2023)	3.8	10.9	2.1	16.8	6.6	19.0	3.7	29.3
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.37	$1.00	$0.21	$1.58	$0.65	$1.74	$0.37	$2.76
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	7.4	21.6	4.2	33.2	12.9	37.4	7.4	57.7
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.14	$0.37	$0.08	$0.59	$0.24	$0.65	$0.14	$1.03

Figure 40 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 2g): 50 Percent Reduction of PSC Limits for BSAI TLA

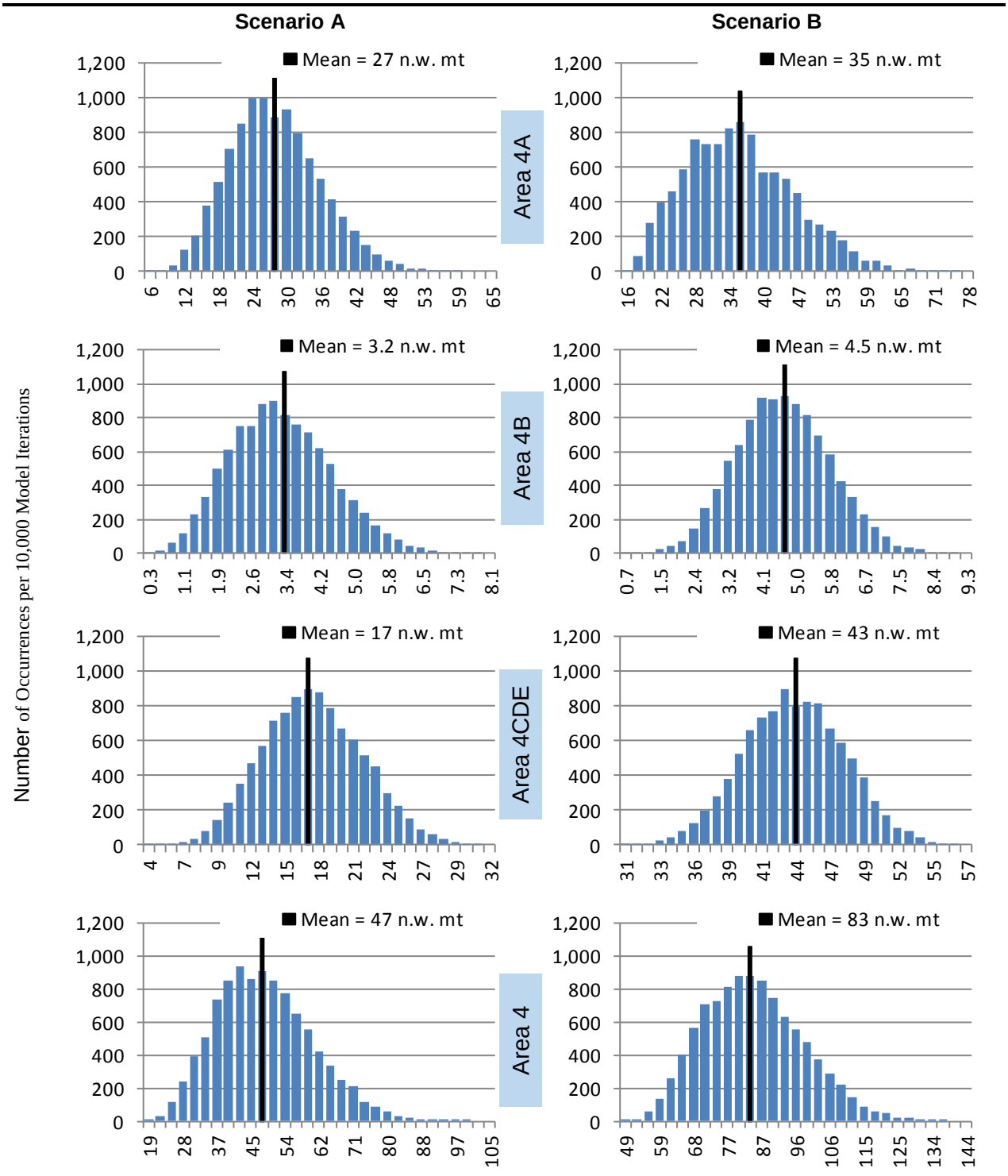


Figure 41 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 2g): 50 Percent Reduction of PSC Limits for BSAI TLA

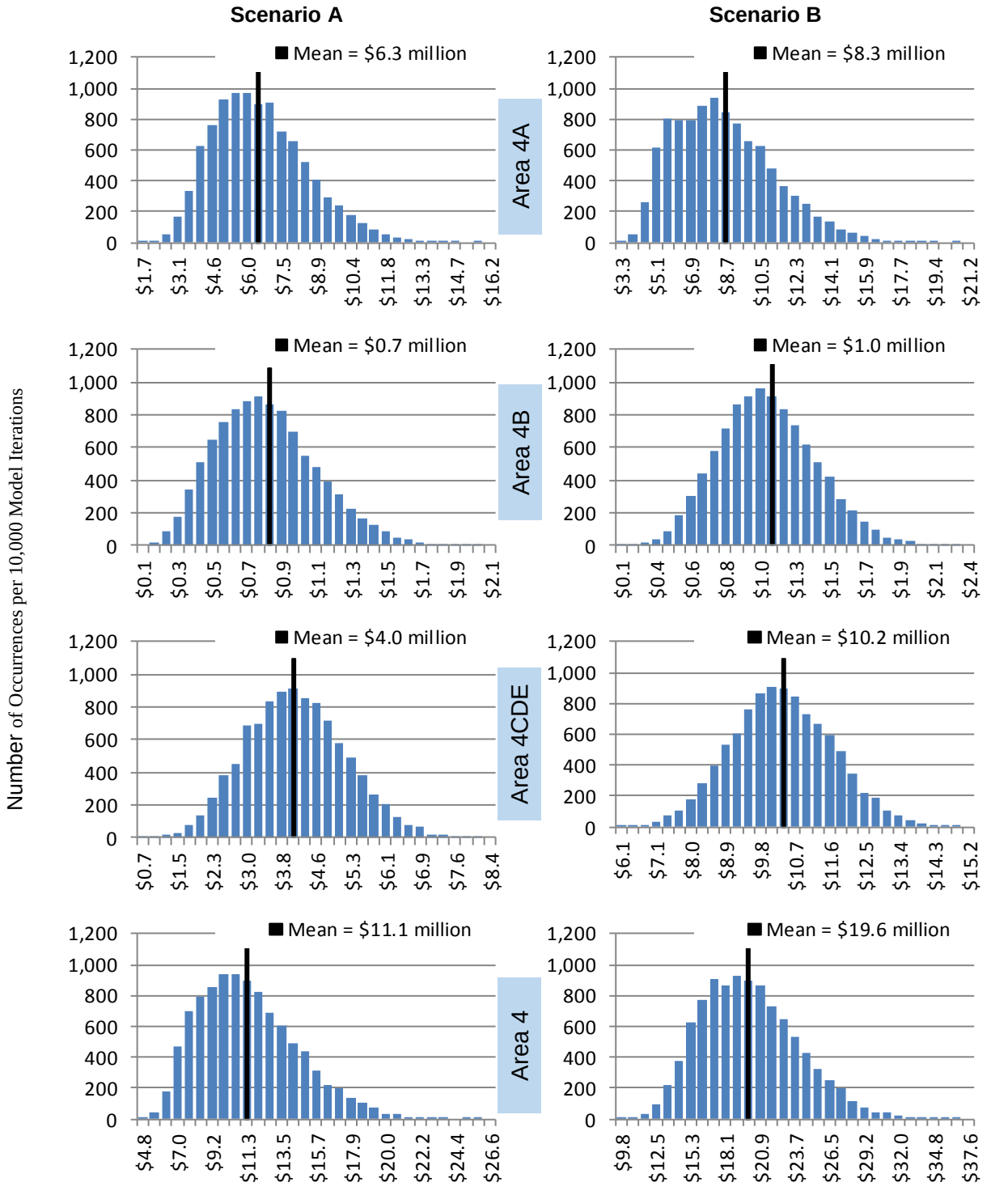
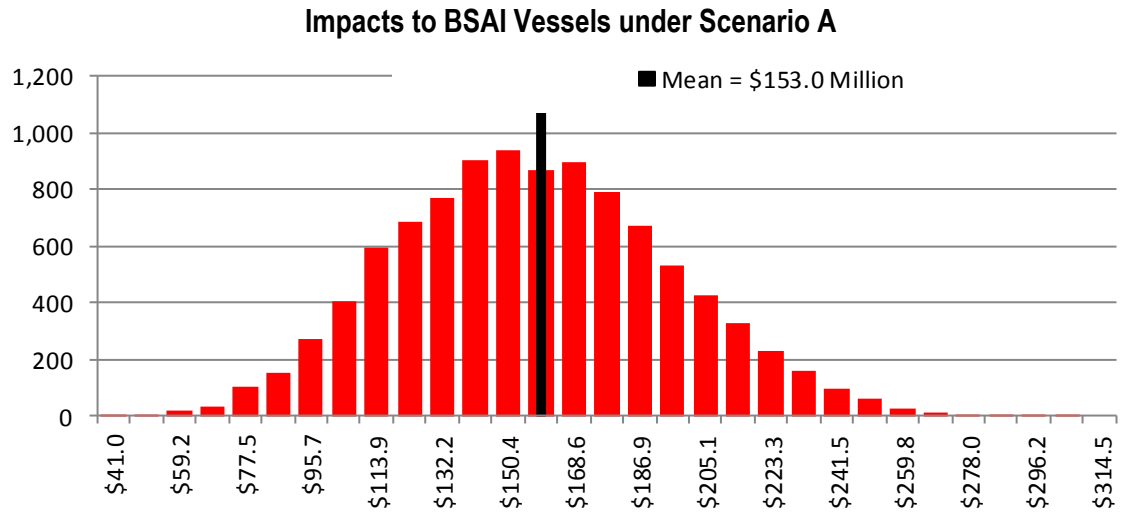
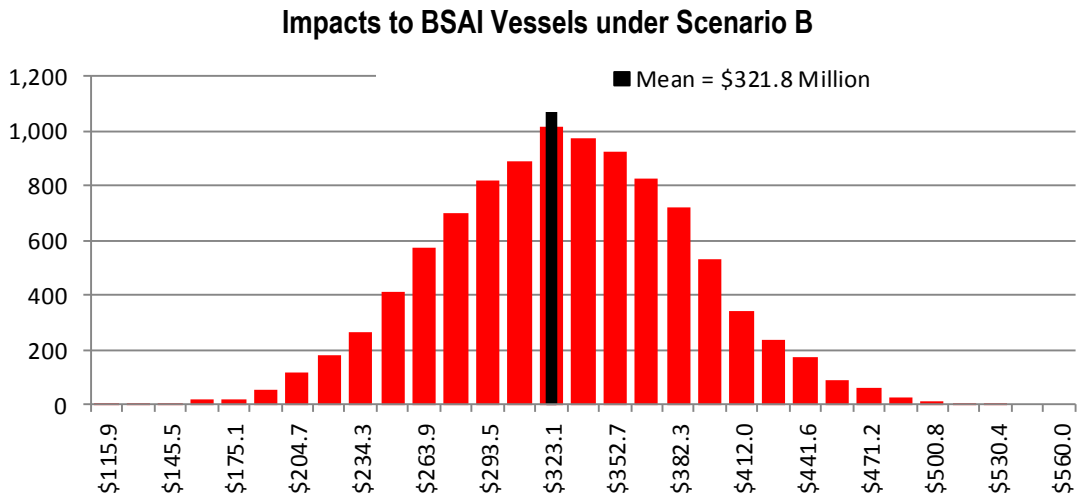
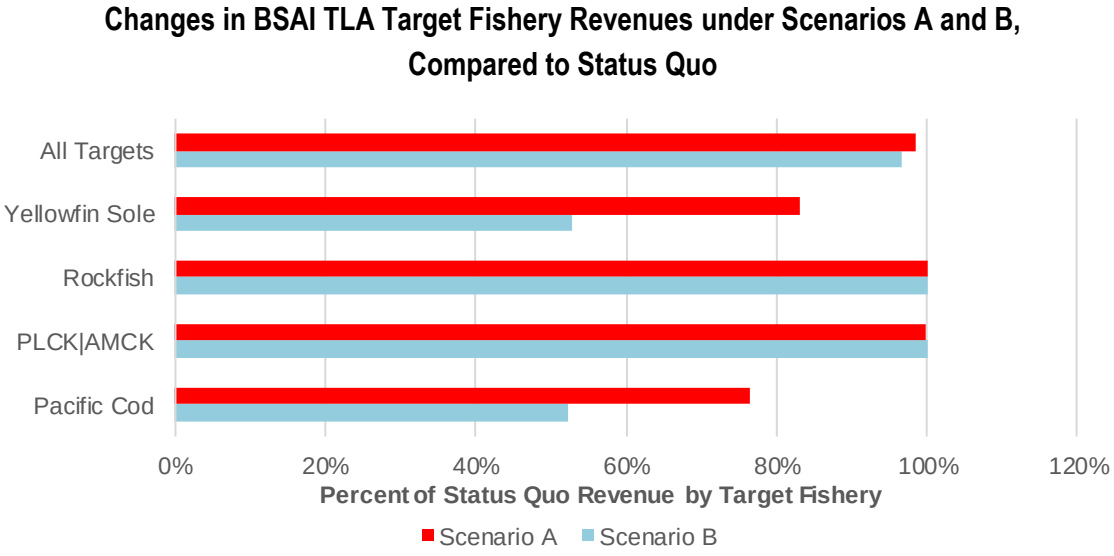


Figure 42 Impacts to BSAI TLA Vessels under Option 2g): 50 Percent Reduction of PSC Limits







3. Impacts of Option 3a to 3g to Reduce Halibut PSC Limits in Pacific cod Target Fishery for Longline Catcher Processors

For each suboption (Option 3a–3g), the IMS Model is run with 10,000 iterations under two different scenarios that represent a low impact case (Scenario A) and a high impact case (Scenario B). The two scenarios are basically the same as those used in the assessment of impacts to A80-CPs. The two scenarios are described below:

- Scenario A: under Scenario A it is assumed that operators of LGL-CPs operating in the Pacific cod fishery, using sector-wide fishery data for the years 2008 to 2013, determine a ranking for each month and NMFS management area based on the wholesale revenue per ton of halibut mortality. They then collectively determine which months and areas must be avoided in order for the cooperative to remain below the PSC limit that has been imposed. Figure 4 81 displays this ranked target-area progression used when 2013 is the basis year. Also shown in the figure are lines representing a last-caught, first-cut catch progression and a fully optimized line that assumes perfect knowledge. For analytical purposes, it is assumed that operators know in advance how much halibut savings will be created by dropping these target months from their repertoire. It is also worth noting that the last-caught, first-cut catch progression in Figure 4 81 is the same progression line shown in Figure 4 40 in Section 4.4.4.5. The figure also includes a vertical line running up the horizontal axis that corresponds to PSC limits imposed under Option 3. Finally it is important to note that Figure 4 81 graphically represents 2013—only one of the six basis years between 2008 and 2013—other basis year will generate different levels of mitigation.
- Scenario B: under Scenario B it is assumed that each LGL-CP company is assigned its own halibut cap by the cooperative. Companies that have excess PSC mortality are assumed to transfer PSC mortality to companies that don't have enough PSC mortality. It is also assumed, however, that each company with excess PSC mortality holds back five percent of their halibut in case they need it later in the year. Finally, Scenario B assumes that if transfers of halibut are not available, then companies with a PSC mortality shortfall will prioritize their fishery efforts by month. This month-based ranking system assumes that each company reviews its historical fishing data and ranks each month in terms of the wholesale revenues per halibut PSC. Once they know how much PSC they must cut, they choose the set of months in which all of their vessels will operate dropping the worst months in order reduce their PSC usage. This is the same methodology used in Scenario B for the A80 fleet.

c. Option 3–Suboption c: Reduce Halibut PSC Limits for the Longline CP Pacific Cod Fishery by 30 Percent

Table 30 Statistical Details of the IMS Model Runs for Option 3c): 30 Percent Reduction of PSC Limits for LGL-CPs

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	24	171	-	-	75	38	-	11	12
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	-	-	-	-	-	($0.02)	-	-	-
Maximum Change in Magnitude of DPV	$2.11	$3.51	$0.31	$4.34	$2.39	$1.80	$4.23	$7.53	($21.90)	($47.84)
Mean Change in DPV	$0.55	$1.26	$0.07	$1.88	$0.77	$0.51	$1.89	$3.17	($10.40)	($22.27)
Standard Deviation of Changes in DPV	$0.82	$0.60	$0.05	$0.97	$0.83	$0.29	$0.72	$1.38	$3.39	$7.29
Median Change in DPV	$0.92	$1.23	$0.07	$2.01	$1.11	$0.49	$1.88	$3.22	($10.42)	($22.11)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-3.1	-10.1	-0.5	-13.8	-4.8	-4.1	-16.1	-25.0	-13.8	-25.0
Mean Annual Change in Directed Catch (Net Weight MT)	2.2	5.3	0.3	7.9	3.1	2.2	8.0	13.3	-	-
Mean Change in DPV ($2013 million) per annual change in halibut (mt)	$0.25	$0.24	$0.23	$0.24	$0.25	$0.24	$0.23	$0.24	$0.76	$0.89

Table 31 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 3c): 30 Percent Reduction of PSC Limits for LGL-CPs

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	1.5	4.3	0.8	6.6	2.8	8.0	1.6	12.4
Average Annual Average over Last 5 years (2019–2023)	0.3	0.9	0.2	1.3	0.6	1.6	0.3	2.5
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.03	$0.08	$0.02	$0.12	$0.06	$0.15	$0.03	$0.23
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	0.6	1.7	0.3	2.6	1.1	3.2	0.6	4.9
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.01	$0.03	$0.01	$0.05	$0.02	$0.05	$0.01	$0.09

Figure 43 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 3c): 30 Percent Reduction of PSC Limits for LGL-CPs

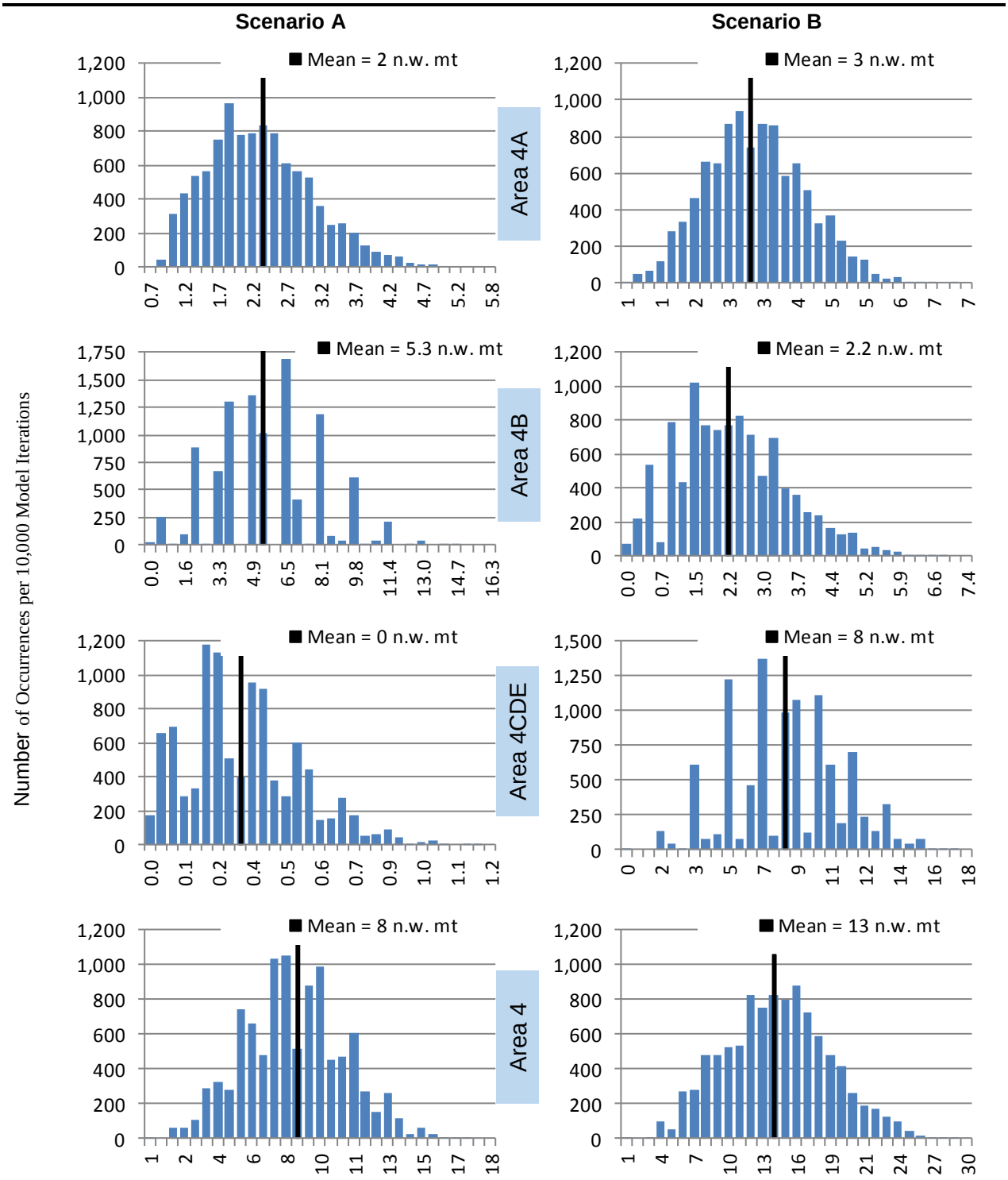


Figure 44 **Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 3c): 30 Percent Reduction of PSC Limits for LGL-CPs**

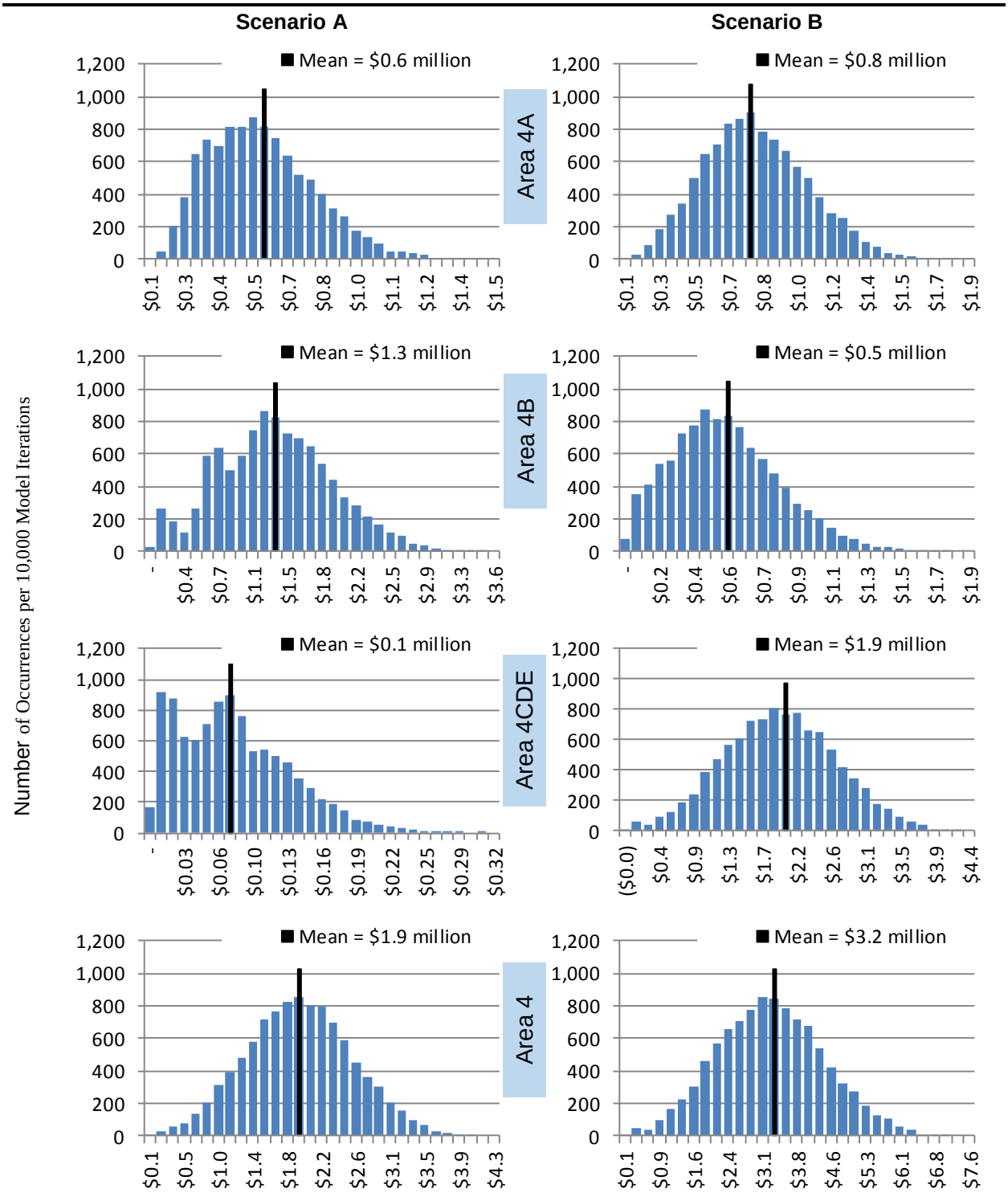
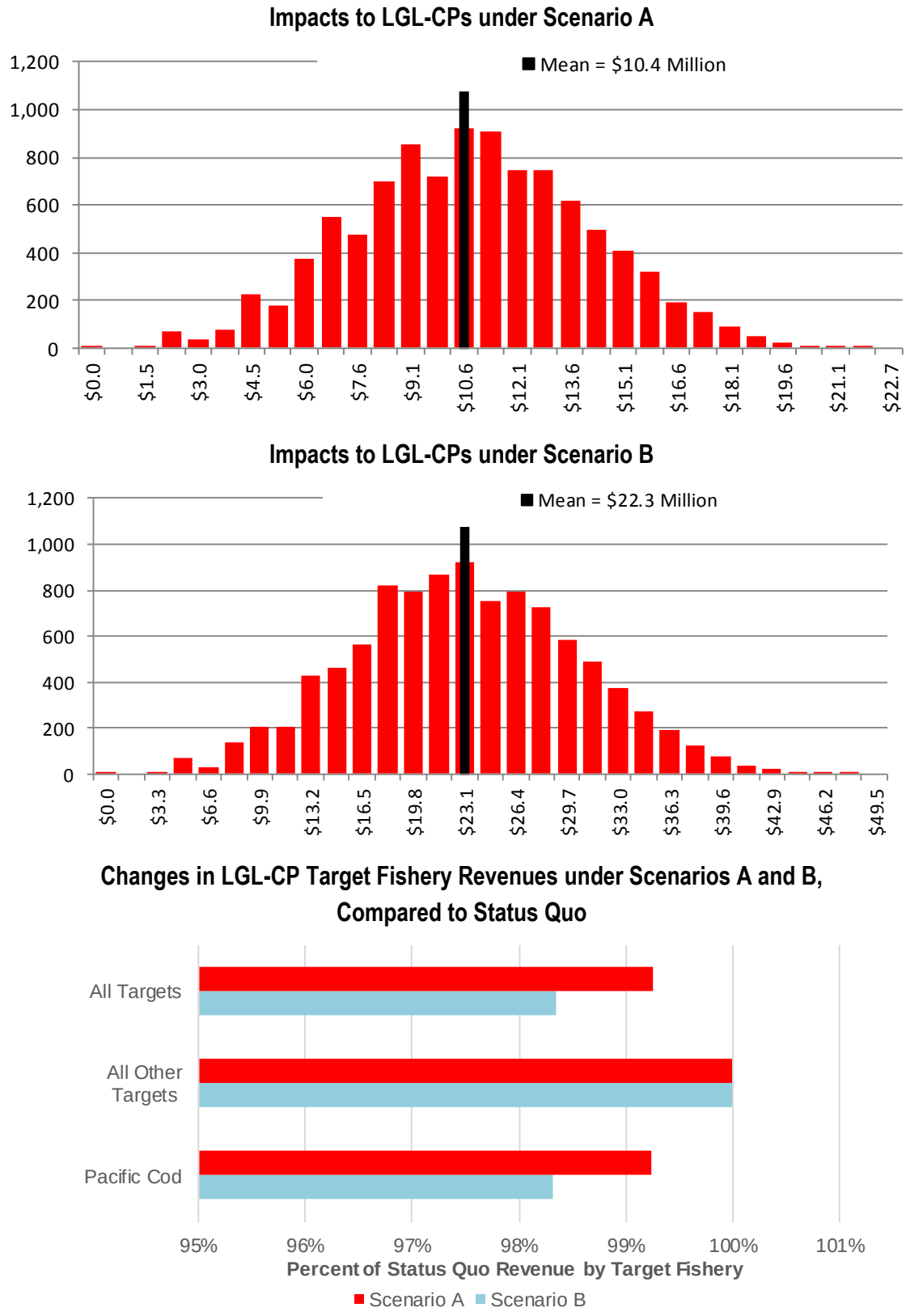


Figure 45 Impacts to Longline CPs under Option 3c): 30 Percent Reduction of PSC Limits



d. Option 3–Suboption d: Reduce Halibut PSC Limits for the Longline CP Pacific Cod Fishery by 35 Percent

Table 32 Statistical Details of the IMS Model Runs for Option 3d): 35 Percent Reduction of PSC Limits for LGL-CPs

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	20	25	-	-	2	-	-	13	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	-	-	-	-	-	$0.03	-	-	($1.58)
Maximum Change in Magnitude of DPV	$3.30	$5.62	$3.31	$9.22	$3.18	$2.39	$7.65	$11.68	($52.52)	($85.03)
Mean Change in DPV	$0.86	$2.04	$1.26	$4.16	$1.24	$0.89	$3.58	$5.71	($24.94)	($44.48)
Standard Deviation of Changes in DPV	$0.92	$0.99	$0.54	$1.61	$0.88	$0.35	$1.23	$1.91	$8.12	$12.53
Median Change in DPV	$1.06	$2.00	$1.23	$4.22	$1.51	$0.88	$3.58	$5.75	($24.82)	($44.42)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-5.5	-16.1	-10.7	-32.3	-8.6	-7.1	-30.1	-45.7	-32.3	-45.7
Mean Annual Change in Directed Catch (Net Weight MT)	3.4	8.6	5.4	17.4	5.1	3.8	15.2	24.1	-	-
Mean Change in DPV (2013$ million) per annual change in halibut (mt)	$0.25	$0.24	$0.23	$0.24	$0.24	$0.24	$0.24	$0.24	$0.77	$0.97

Table 33 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 3d): 35 Percent Reduction of PSC Limits for LGL-CPs

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	3.5	10.2	2.0	15.7	5.0	14.5	2.9	22.4
Average Annual Average over Last 5 years (2019–2023)	0.7	2.0	0.4	3.1	1.0	2.9	0.6	4.5
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.07	$0.19	$0.04	$0.30	$0.10	$0.27	$0.06	$0.42
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	1.4	4.0	0.8	6.2	2.0	5.7	1.1	8.9
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.03	$0.07	$0.01	$0.11	$0.04	$0.10	$0.02	$0.16

Figure 46 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 3d): 35 Percent Reduction of PSC Limits for LGL-CPs

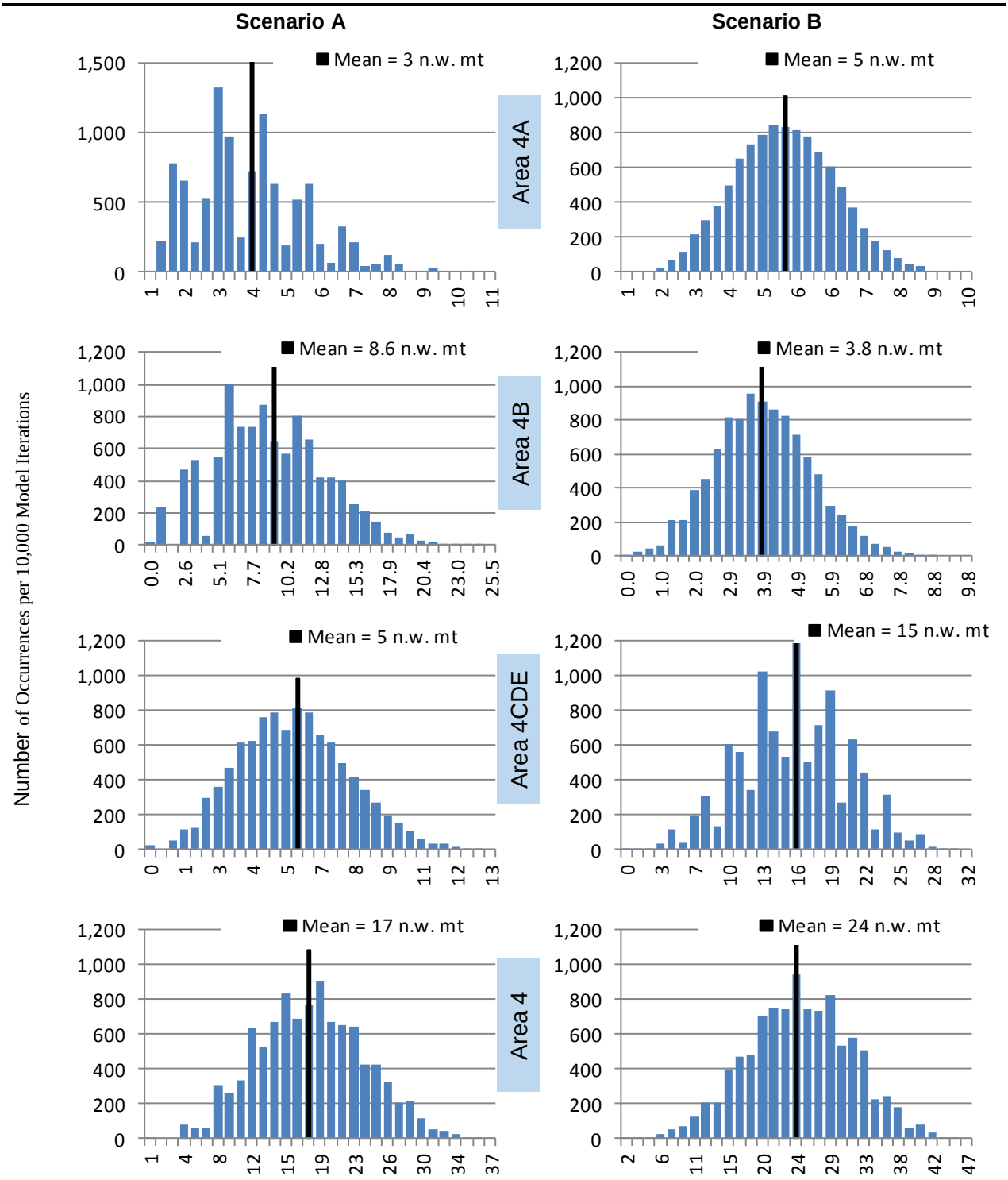


Figure 47 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 3d): 35 Percent Reduction of PSC Limits for LGL-CPs

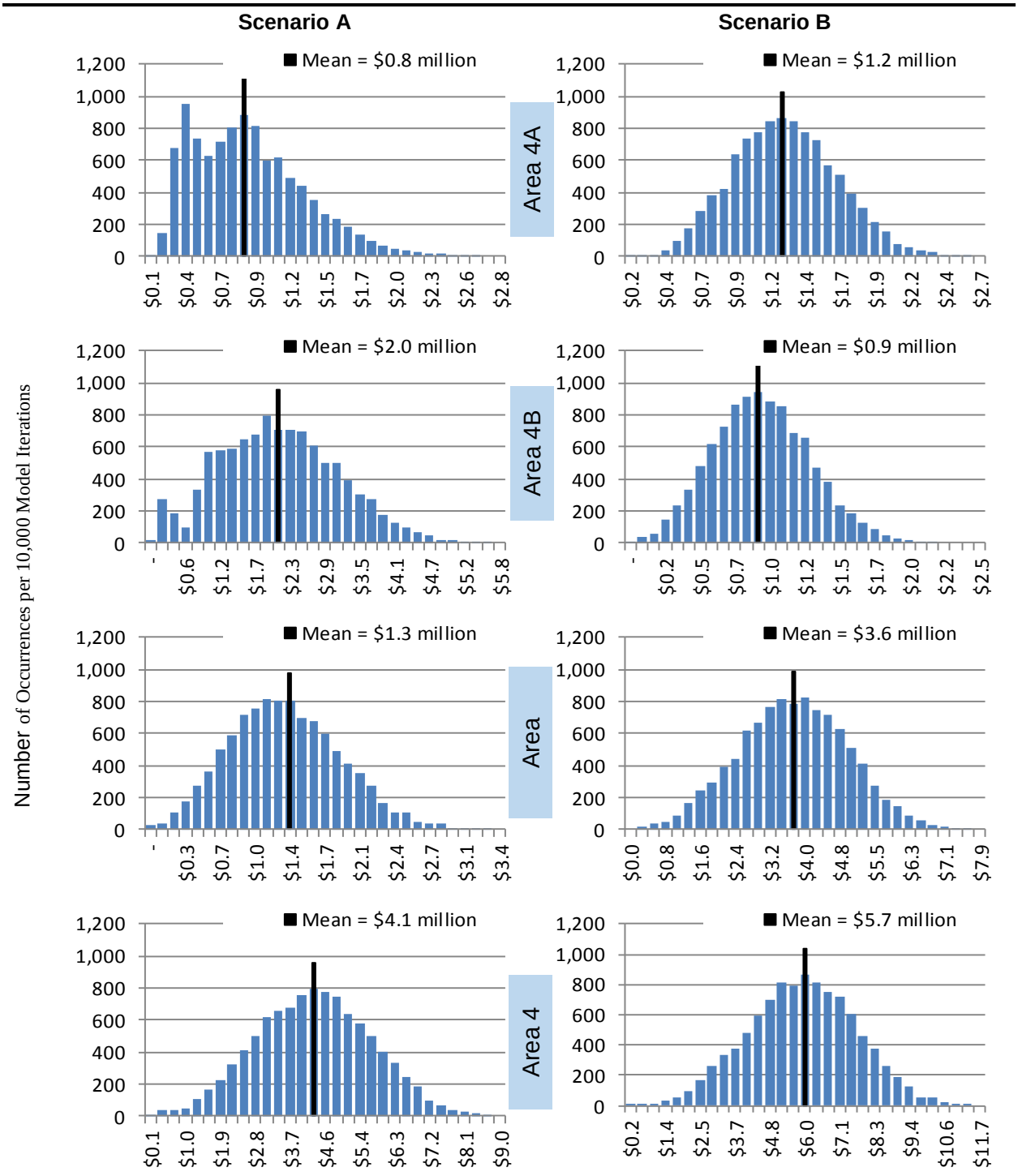
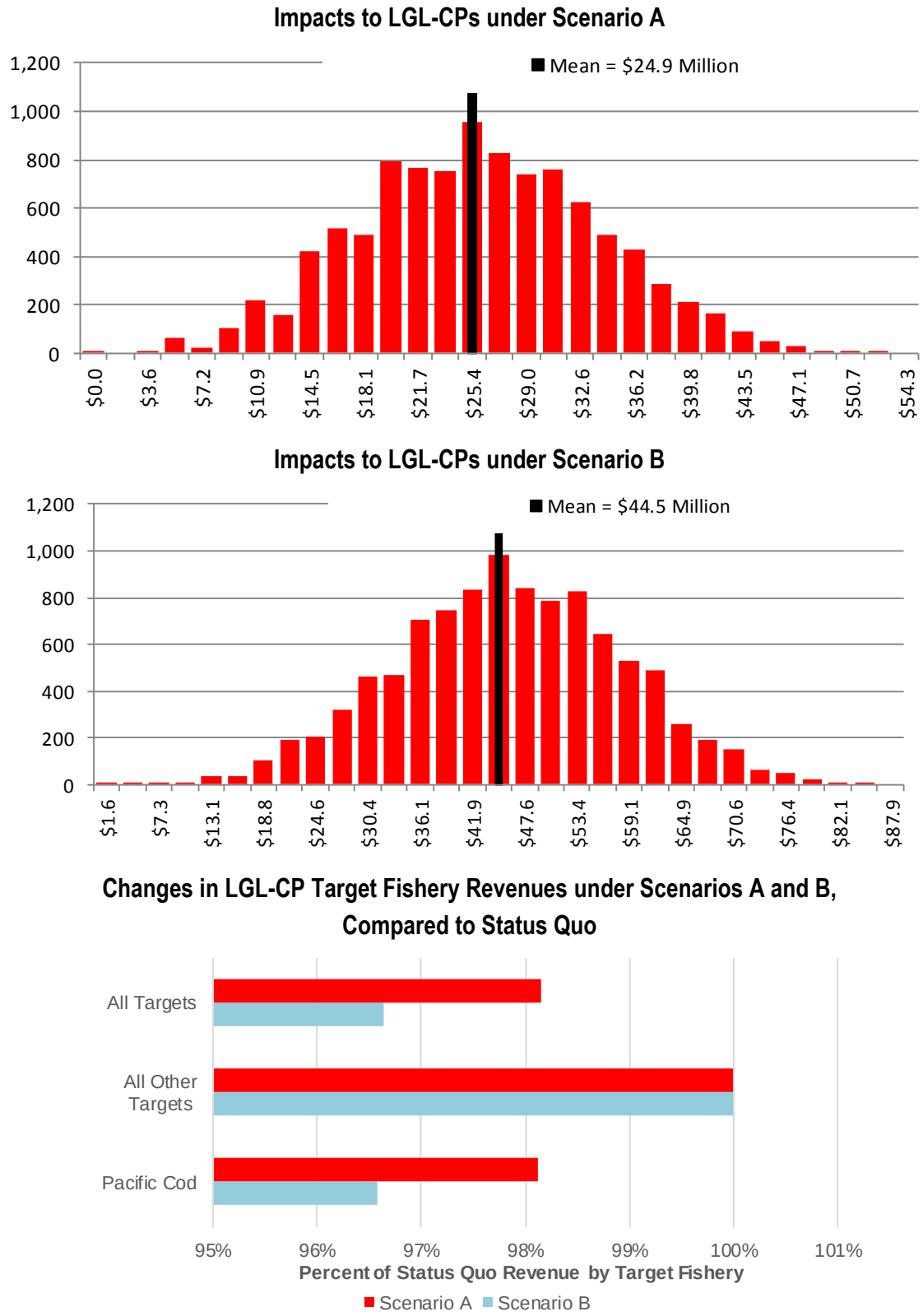


Figure 48 Impacts to Longline CPs under Option 3d): 35 Percent Reduction of PSC Limits



e. Option 3–Suboption e: Reduce Halibut PSC Limits for the Longline CP Pacific Cod Fishery by 40 Percent

Table 34 Statistical Details of the IMS Model Runs for Option 3e): 40 Percent Reduction of PSC Limits for LGL-CPs

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$0.15	$0.02	-	-	$0.02	$1.39	-	($4.62)	($36.57)
Maximum Change in Magnitude of DPV	$6.19	$6.07	$5.42	$13.45	$4.07	$2.80	$10.65	$16.02	($93.27)	($145.39)
Mean Change in DPV	$2.41	$2.93	$2.25	$7.59	$2.54	$1.11	$6.19	$9.84	($50.31)	($89.49)
Standard Deviation of Changes in DPV	$1.11	$0.93	$0.90	$2.13	$0.87	$0.41	$1.41	$2.12	$13.05	$15.11
Median Change in DPV	$2.48	$2.93	$2.21	$7.69	$2.82	$1.09	$6.23	$10.00	($50.43)	($89.54)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-18.2	-23.4	-19.0	-60.6	-19.0	-8.7	-51.5	-79.3	-60.6	-79.3
Mean Annual Change in Directed Catch (Net Weight MT)	10.1	12.4	9.6	32.1	10.6	4.7	26.3	41.5	-	-
Mean Change in DPV ($2013 million) per annual change in halibut (mt)	$0.24	$0.24	$0.23	$0.24	$0.24	$0.24	$0.24	$0.24	$0.83	$1.13

Table 35 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 3e): 40 Percent Reduction of PSC Limits for LGL-CPs

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	6.6	19.1	3.8	29.4	8.7	25.2	5.0	38.9
Average Annual Average over Last 5 years (2019–2023)	1.3	3.8	0.8	5.9	1.7	5.0	1.0	7.8
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.13	$0.35	$0.07	$0.55	$0.17	$0.46	$0.10	$0.73
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	2.6	7.5	1.5	11.6	3.4	9.9	2.0	15.3
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.05	$0.13	$0.03	$0.21	$0.06	$0.17	$0.04	$0.27

Figure 49 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 3e): 40 Percent Reduction of PSC Limits for LGL-CPs

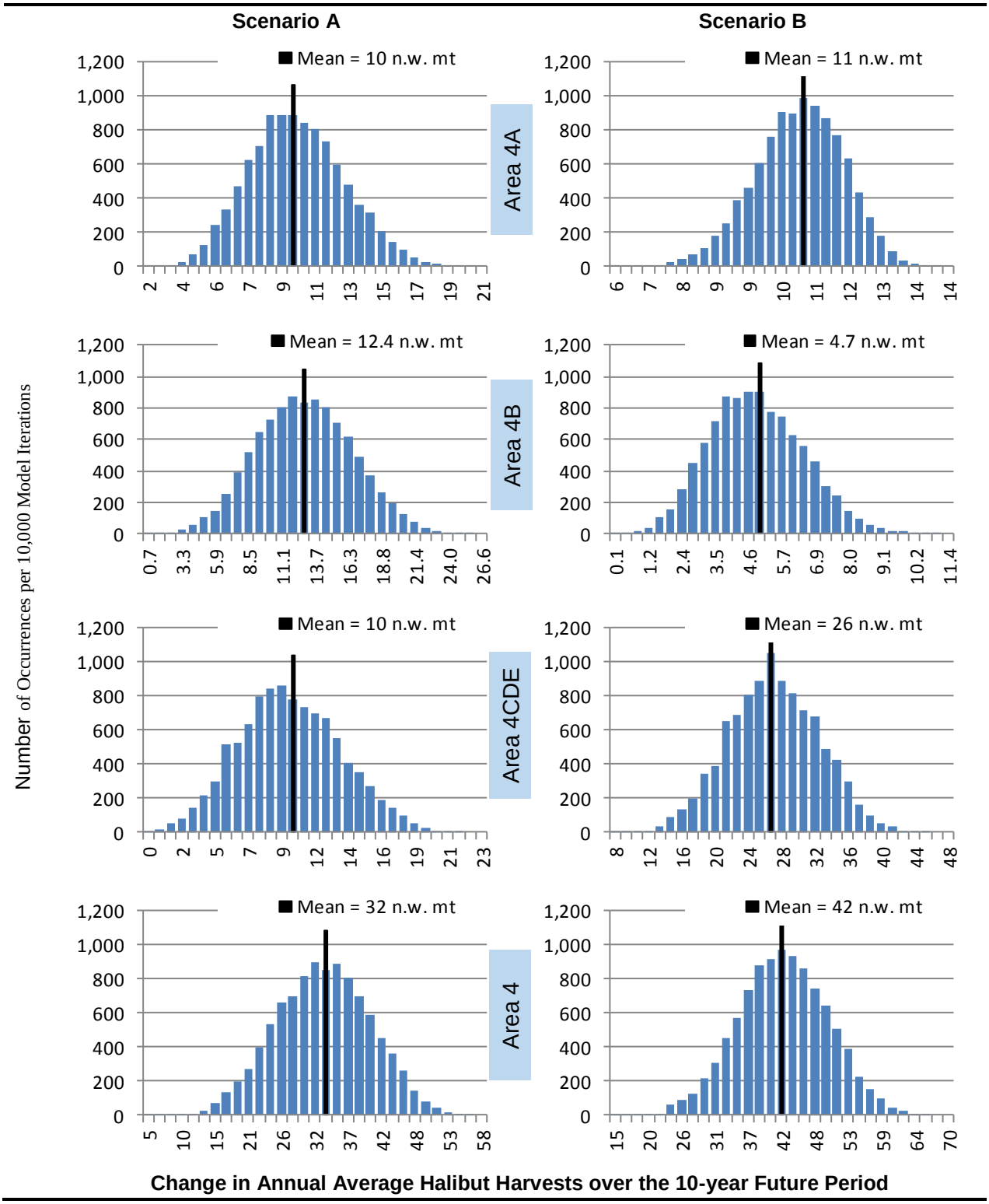


Figure 50 **Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 3e): 40 Percent Reduction of PSC Limits for LGL-CPs**

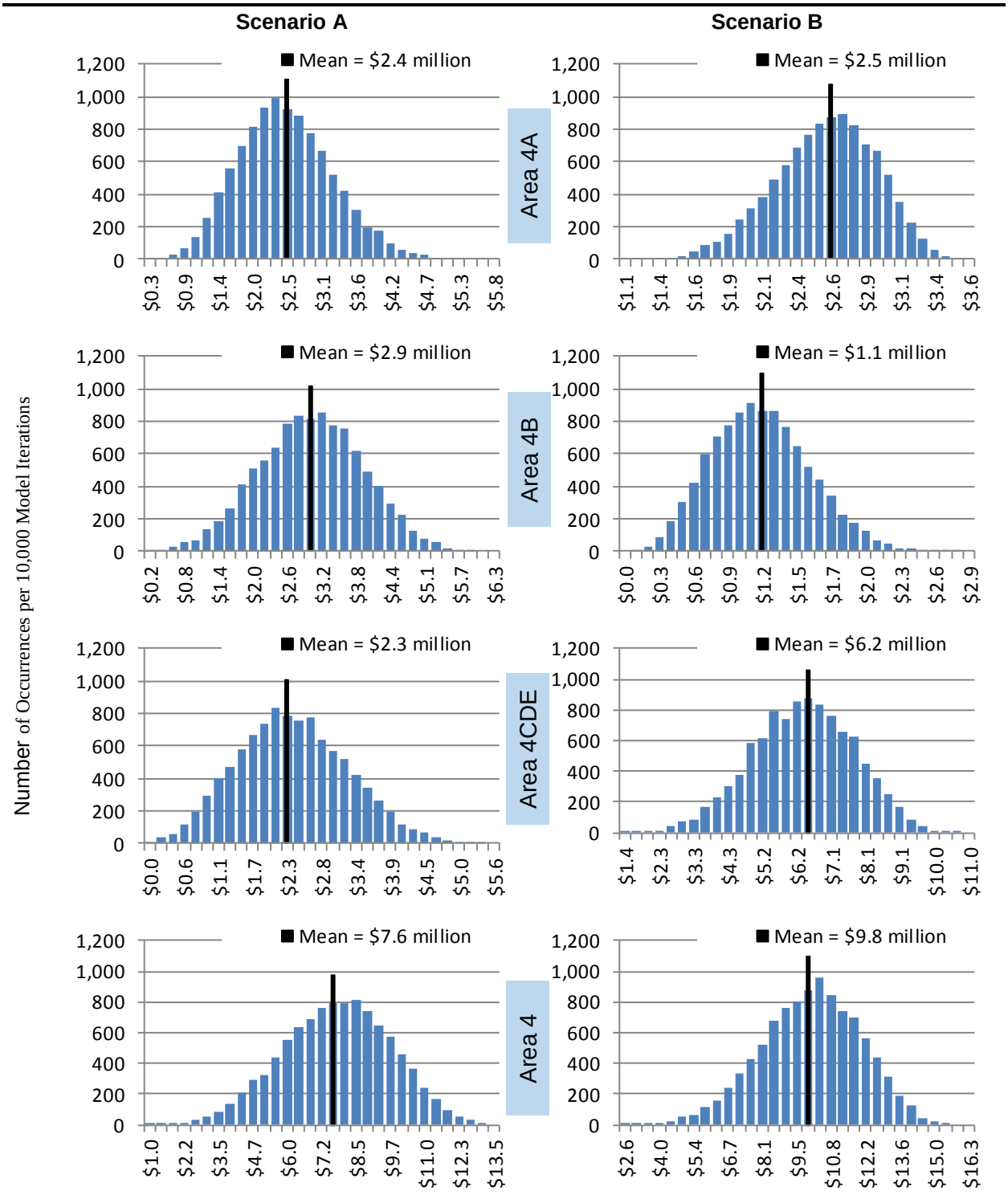
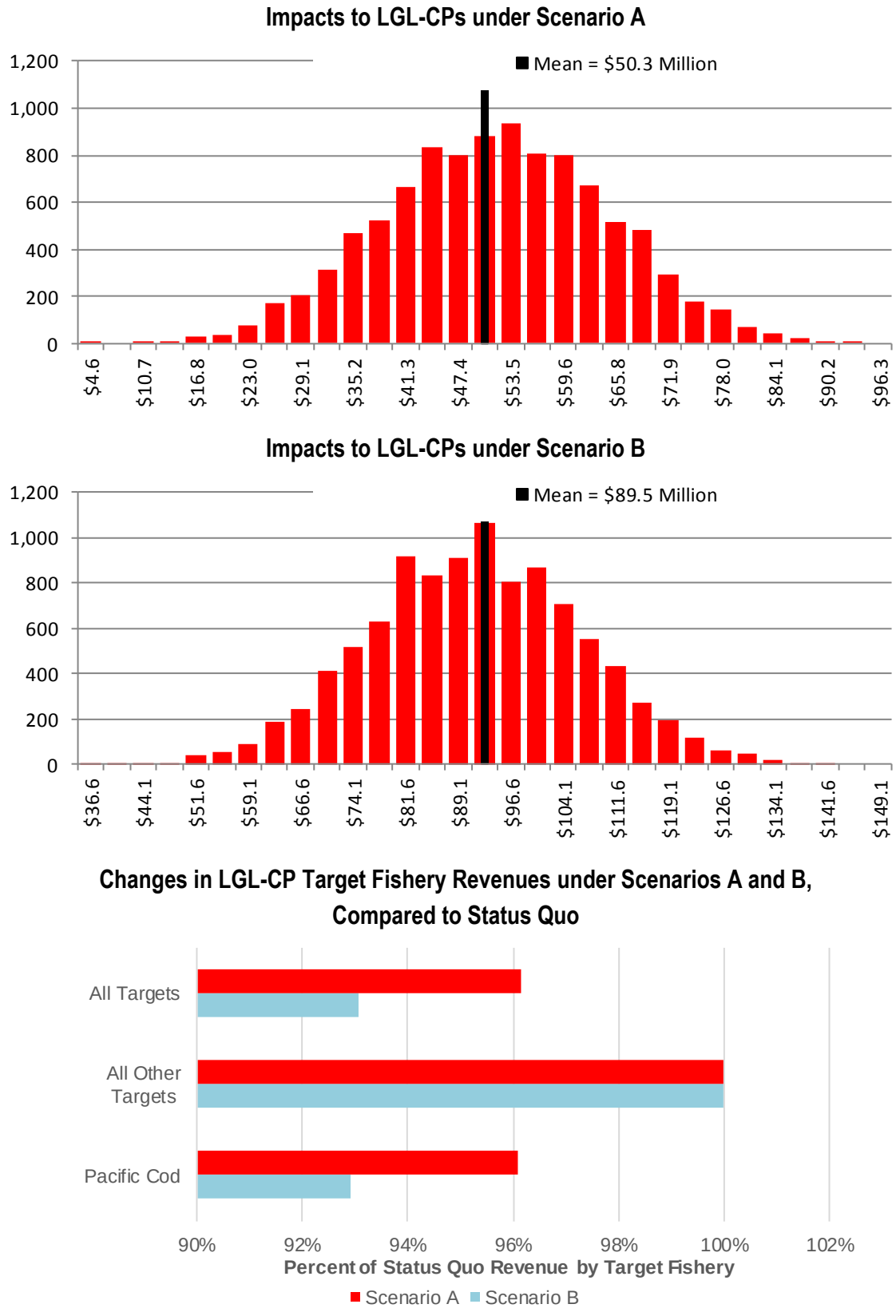


Figure 51 Impacts to Longline CPs under Option 3e): 40 Percent Reduction of PSC Limits



f. Option 3–Suboption f: Reduce Halibut PSC Limits for the Longline CP Pacific Cod Fishery by 45 Percent

Table 36 Statistical Details of the IMS Model Runs for Option 3f): 45 Percent Reduction of PSC Limits for LGL-CPs

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$0.09	$0.90	-	-	$0.11	$3.22	-	($39.35)	($80.76)
Maximum Change in Magnitude of DPV	$7.28	$6.13	$9.10	$18.59	$5.53	$2.90	$14.52	$20.65	($144.88)	($189.79)
Mean Change in DPV	$4.24	$3.15	$4.90	$12.30	$3.82	$1.28	$9.34	$14.44	($100.10)	($137.59)
Standard Deviation of Changes in DPV	$0.97	$0.98	$1.32	$2.31	$0.81	$0.41	$1.82	$2.38	$14.56	$16.40
Median Change in DPV	$4.36	$3.16	$4.90	$12.43	$4.06	$1.27	$9.38	$14.57	($100.33)	($137.49)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-33.8	-25.1	-40.8	-99.7	-29.8	-10.0	-77.8	-117.6	-99.7	-117.6
Mean Annual Change in Directed Catch (Net Weight MT)	17.8	13.4	20.9	52.1	16.1	5.5	39.6	61.2	-	-
Mean Change in DPV (2013$ million) per annual change in halibut (mt)	$0.24	$0.24	$0.23	$0.24	$0.24	$0.23	$0.24	$0.24	$1.00	$1.17

Table 37 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 3f): 45 Percent Reduction of PSC Limits for LGL-CPs

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	11.0	31.9	6.3	49.3	13.0	37.7	7.4	58.1
Average Annual Average over Last 5 years (2019–2023)	2.2	6.4	1.3	9.9	2.6	7.5	1.5	11.6
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.22	$0.58	$0.12	$0.93	$0.26	$0.69	$0.15	$1.10
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	4.4	12.6	2.5	19.4	5.1	14.9	2.9	22.9
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.08	$0.22	$0.05	$0.35	$0.10	$0.26	$0.05	$0.41

Figure 52 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 3f): 45 Percent Reduction of PSC Limits for LGL-CPs

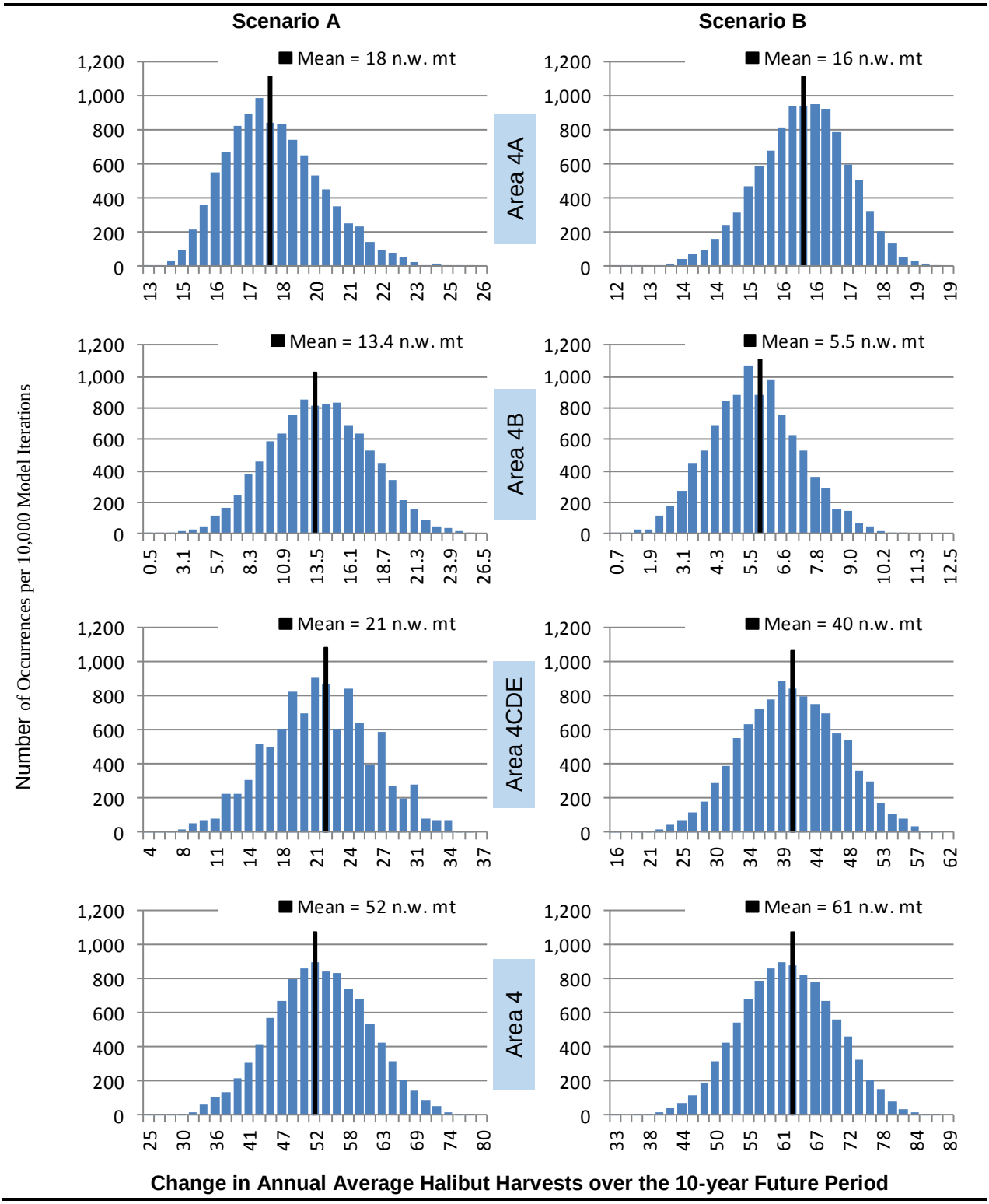


Figure 53 **Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 3f): 45 Percent Reduction of PSC Limits for LGL-CPs**

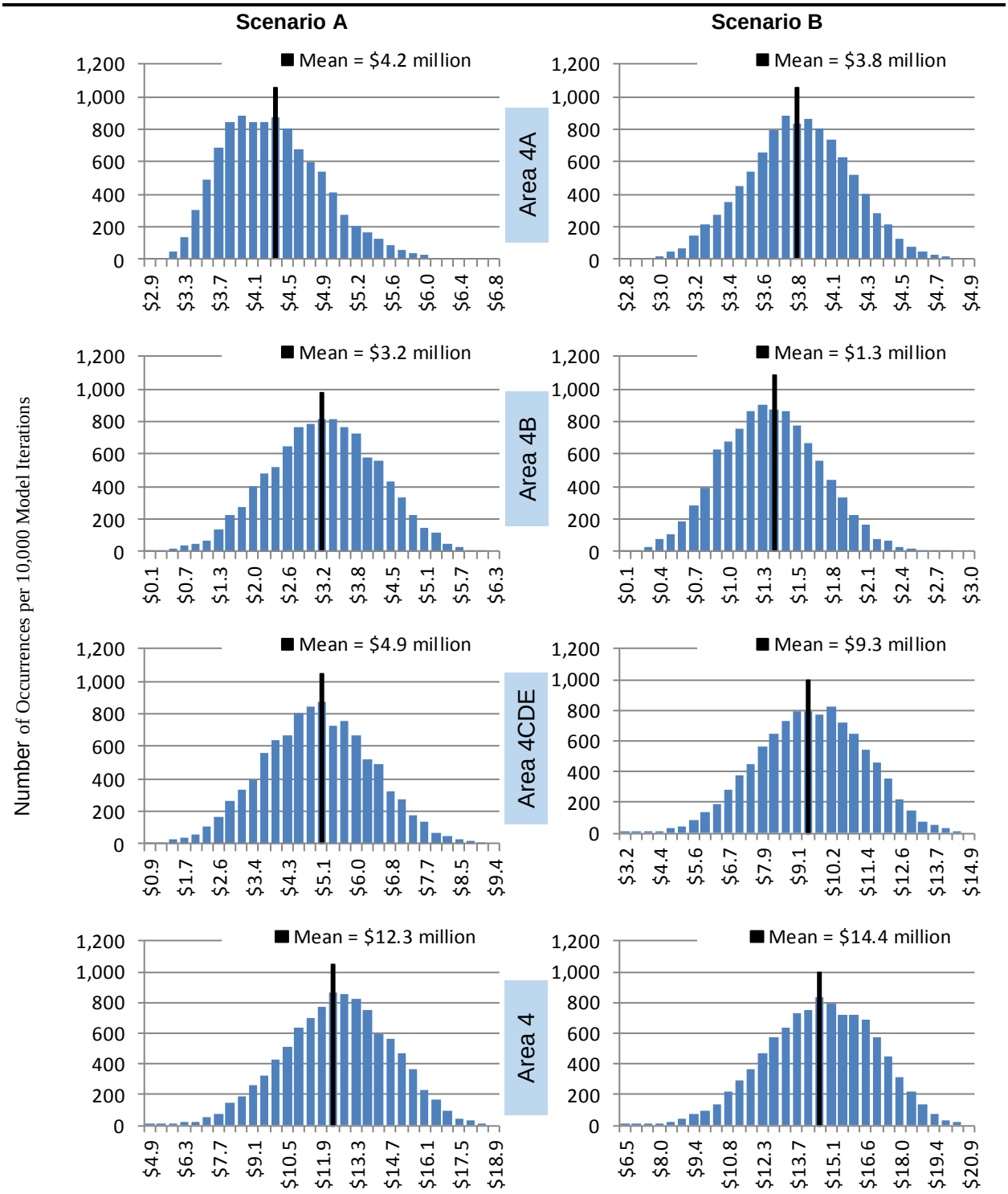
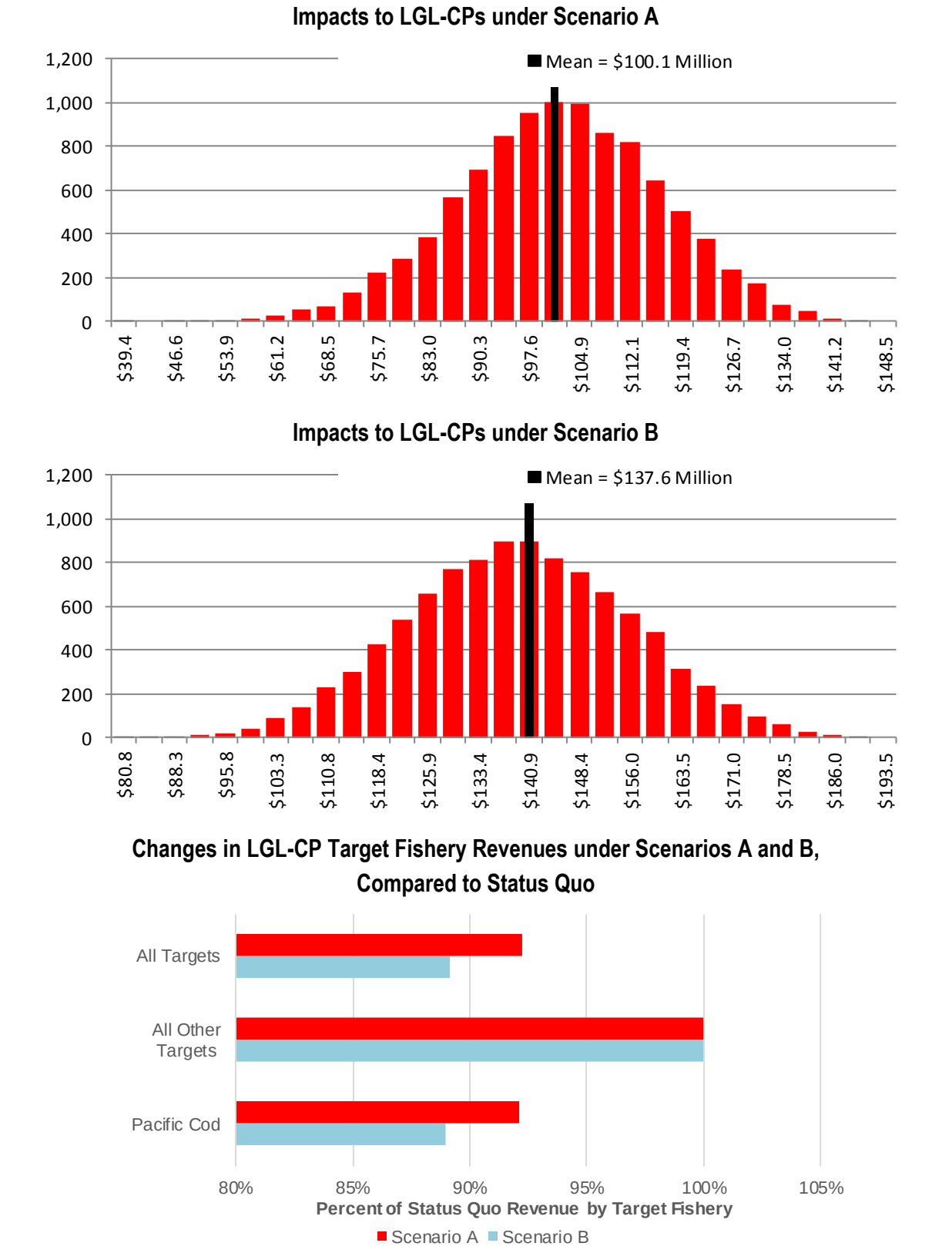


Figure 54 Impacts to Longline CPs under Option 3f): 45 Percent Reduction of PSC Limits



g. Option 3–Suboption g: Reduce Halibut PSC Limits for the Longline CP Pacific Cod Fishery by 50 Percent

Table 38 Statistical Details of the IMS Model Runs for Option 3g): 50 Percent Reduction of PSC Limits for LGL-CPs

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$0.51	$2.08	-	-	$0.12	$5.26	-	($92.89)	($128.18)
Maximum Change in Magnitude of DPV	$9.22	$6.85	$11.27	$23.59	$6.20	$3.68	$18.93	$25.62	($194.29)	($255.78)
Mean Change in DPV	$7.08	$3.63	$6.20	$16.91	$4.71	$1.62	$12.47	$18.80	($152.18)	($191.06)
Standard Deviation of Changes in DPV	$0.94	$1.01	$1.40	$2.49	$0.75	$0.49	$2.16	$2.61	$15.60	$18.76
Median Change in DPV	$7.22	$3.63	$6.16	$17.06	$4.94	$1.61	$12.56	$18.98	($153.15)	($191.27)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-56.8	-28.8	-52.0	-137.6	-37.2	-12.6	-103.5	-153.3	-137.6	-153.3
Mean Annual Change in Directed Catch (Net Weight MT)	29.9	15.4	26.4	71.6	19.8	6.9	52.8	79.6	-	-
Mean Change in DPV (2013$ million) per annual change in halibut (mt)	$0.24	$0.24	$0.24	$0.24	$0.24	$0.23	$0.24	$0.24	$1.11	$1.25

Table 39 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 3g): 50 Percent Reduction of PSC Limits for LGL-CPs

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	15.3	44.1	8.7	68.1	17.0	49.3	9.7	76.1
Average Annual Average over Last 5 years (2019–2023)	3.1	8.8	1.7	13.6	3.4	9.9	1.9	15.2
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.31	$0.81	$0.17	$1.28	$0.34	$0.90	$0.19	$1.43
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	6.0	17.4	3.4	26.8	6.7	19.4	3.8	30.0
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.11	$0.30	$0.06	$0.48	$0.13	$0.34	$0.07	$0.53

Figure 55 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 3g): 50 Percent Reduction of PSC Limits for LGL-CPs

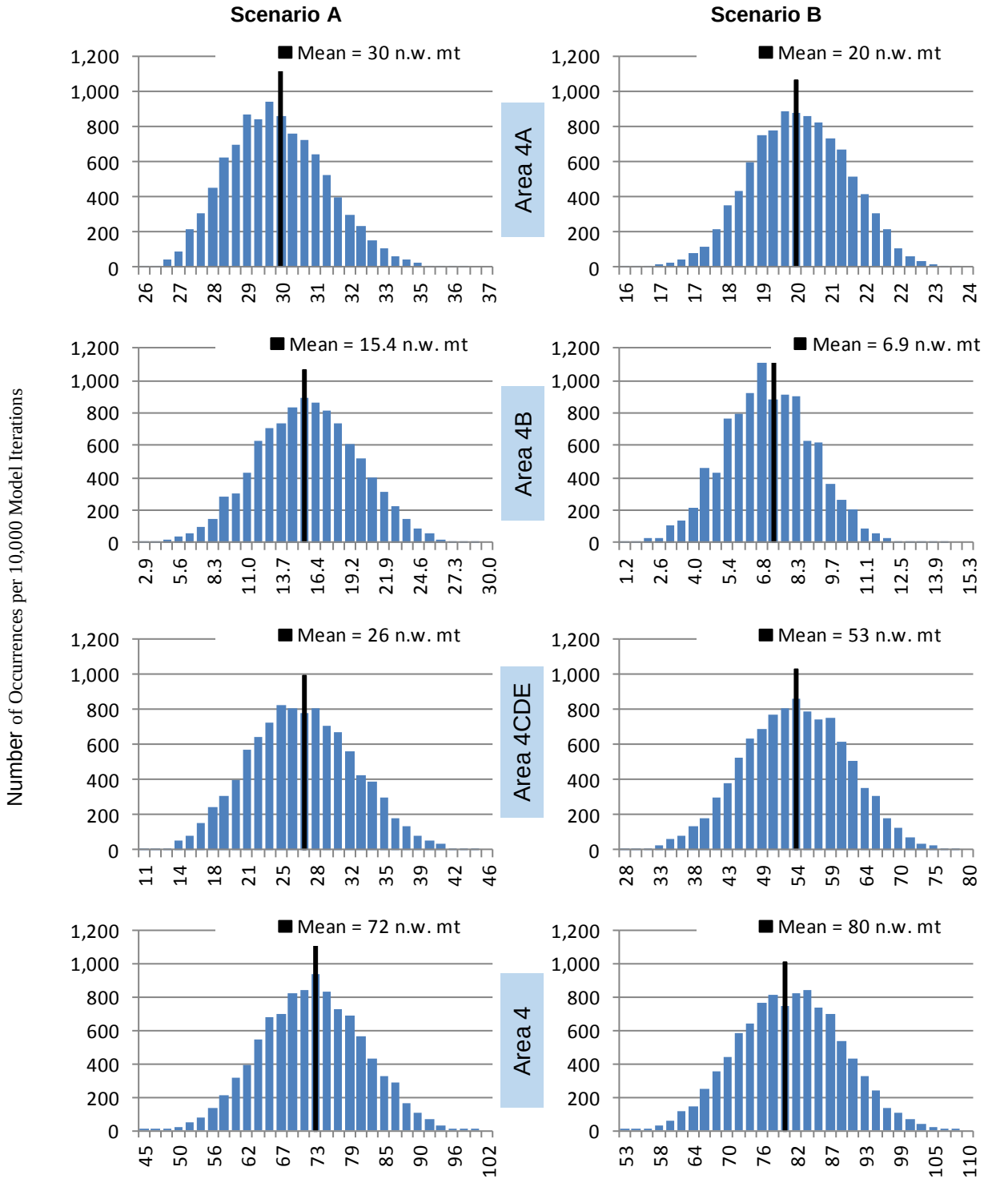


Figure 56 **Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 3g): 50 Percent Reduction of PSC Limits for LGL-CPs**

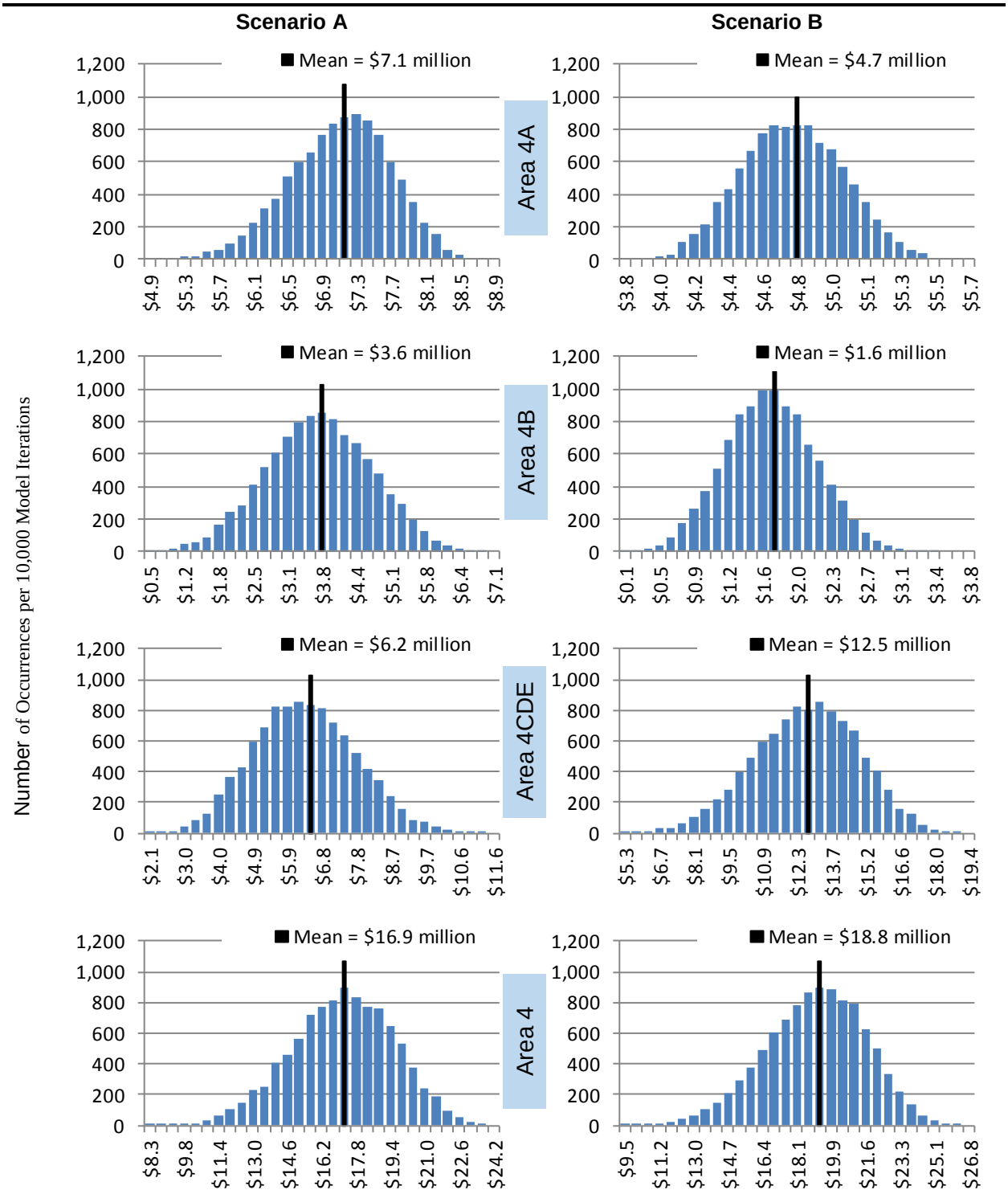
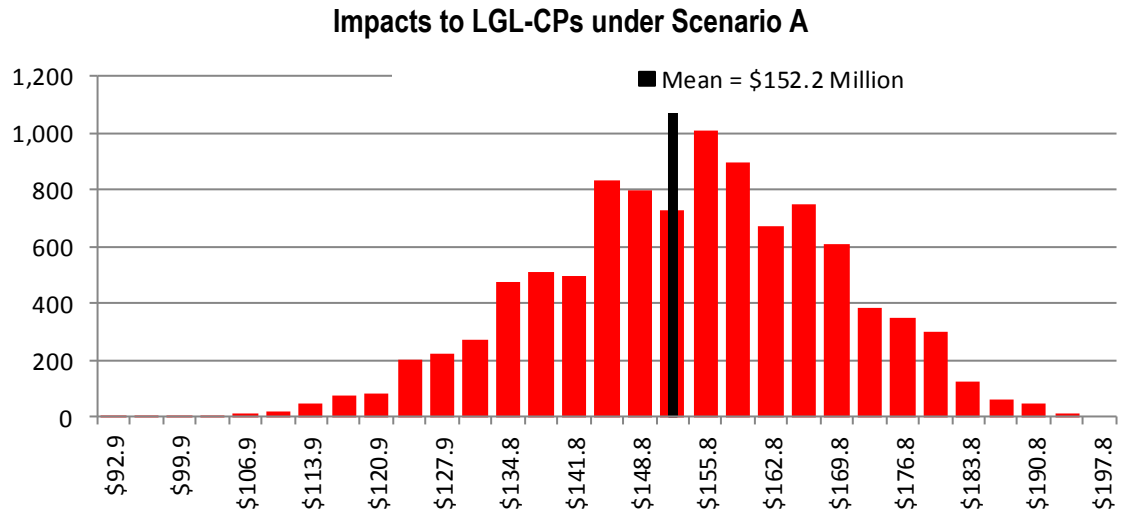
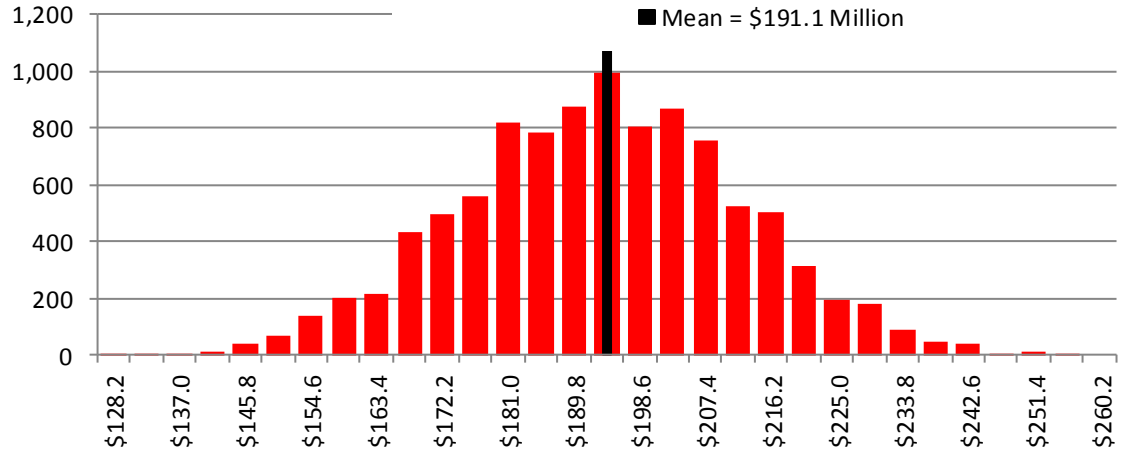
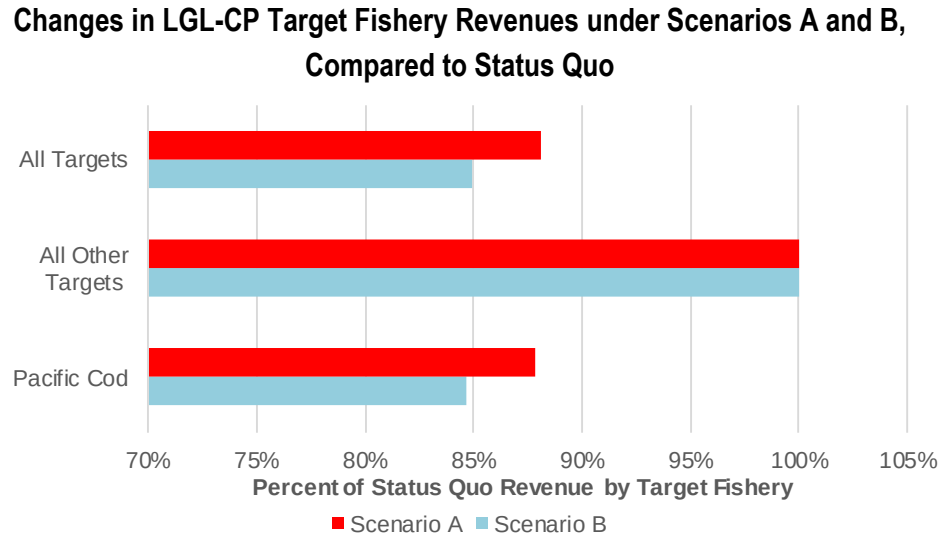


Figure 57 Impacts to Longline CPs under Option 3g): 50 Percent Reduction of PSC Limits







6. Impacts of Option 6a to 6g to Reduce Halibut PSC Limits in the Community Development Quota Fisheries for Groundfish

For each suboption assessed, the IMS Model is run with 10,000 iterations under two different scenarios that represent a low impact case (Scenario A) and a high impact case (Scenario B). The CDQ groundfish fisheries are considered to be rationalized, and therefore the CDQ groups are assumed to be able to organize their fishing effort in a form of collective decision making which lead directly to scenario assumed for the CDQ fisheries. These Scenarios are very similar to the Scenarios used to model the PSC limit reduction options for LGL-CP Pacific cod target fishery and are described below:

- under Scenario A, it is assumed that the organizations make a joint decision to rank target fisheries to determine the fisheries in which all CDQs will participate, and those that will be avoided in order for all CDQ groups to stay under the limit. The ranking is done in terms of the overall wholesale revenue per PSC for each fishery.
- under Scenario B, it is assumed that CDQ organizations make a joint decision to determine which fisheries must be off limits in order for CDQs as a whole to remain below the PSC limit, while cutting the groundfish harvests with high levels of halibut encounters and relatively low amounts of wholesale revenue generated.

d. Option 6—Suboption d: Reduce Halibut PSC Limits for CDQ Fisheries

Table 40 Statistical Details of the IMS Model Runs for Option 6d): 35 Percent Reduction of PSC Limits for CDQ Fisheries

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	4,099	2,058	-	-	4,023	2,469	-	1,636	1,604
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	-	-	-	-	-	($0.02)	-	-	-
Maximum Change in Magnitude of DPV	$1.14	$0.01	$0.85	$1.80	$1.45	$0.01	$0.17	$1.52	($1.92)	($9.38)
Mean Change in DPV	$0.25	$0.00	$0.18	$0.44	$0.33	$0.00	$0.02	$0.35	($0.45)	($2.20)
Standard Deviation of Changes in DPV	$0.76	$0.00	$0.14	$0.74	$0.75	$0.00	$0.03	$0.74	$0.32	$1.55
Median Change in DPV	$0.71	$0.00	$0.16	$0.78	$0.68	$0.00	$0.02	$0.70	($0.46)	($2.23)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-0.5	0.0	-1.8	-2.3	-1.3	0.0	-0.4	-1.6	-2.3	-1.6
Mean Annual Change in Directed Catch (Net Weight MT)	0.9	0.0	0.8	1.7	1.2	0.0	0.1	1.3	-	-
Mean Change in DPV ($2013 million) per annual change in halibut (mt)	$0.29	$0.20	$0.23	$0.26	$0.27	$0.20	$0.21	$0.26	$0.19	$1.33

Table 41 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 6d): 35 Percent Reduction of PSC Limits for CDQ Fisheries

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	0.3	1.0	0.2	1.5	0.2	0.7	0.1	1.1
Average Annual Average over Last 5 years (2019–2023)	0.1	0.2	0.0	0.3	0.0	0.1	0.0	0.2
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.01	$0.02	$0.00	$0.03	$0.00	$0.01	$0.00	$0.02
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	0.1	0.4	0.1	0.6	0.1	0.3	0.1	0.4
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.00	$0.01	$0.00	$0.01	$0.00	$0.00	$0.00	$0.01

Figure 58 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 6d): 35 Percent Reduction of PSC Limits for CDQ Fisheries

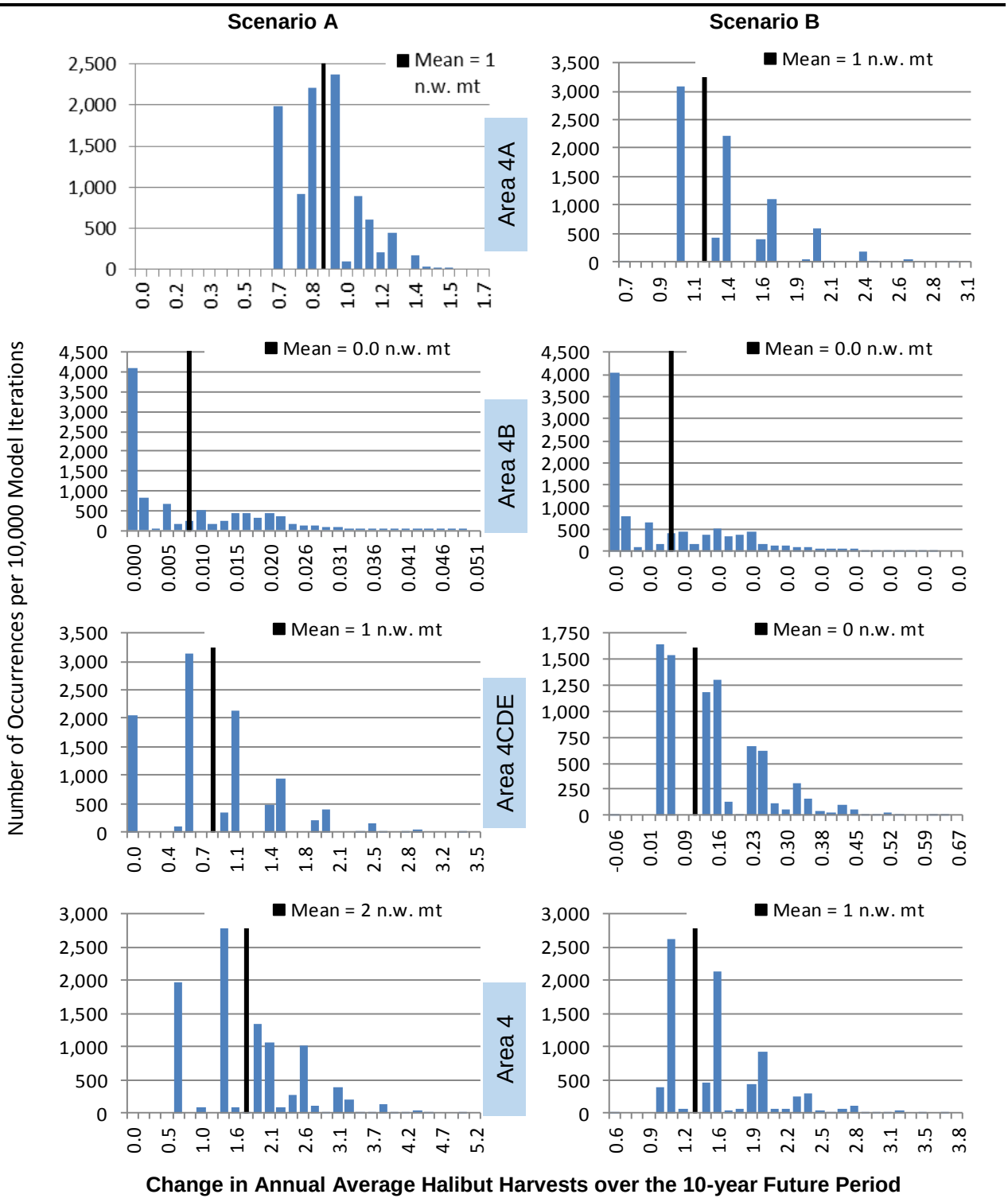


Figure 59 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 6d): 35 Percent Reduction of PSC Limits for CDQ Fisheries

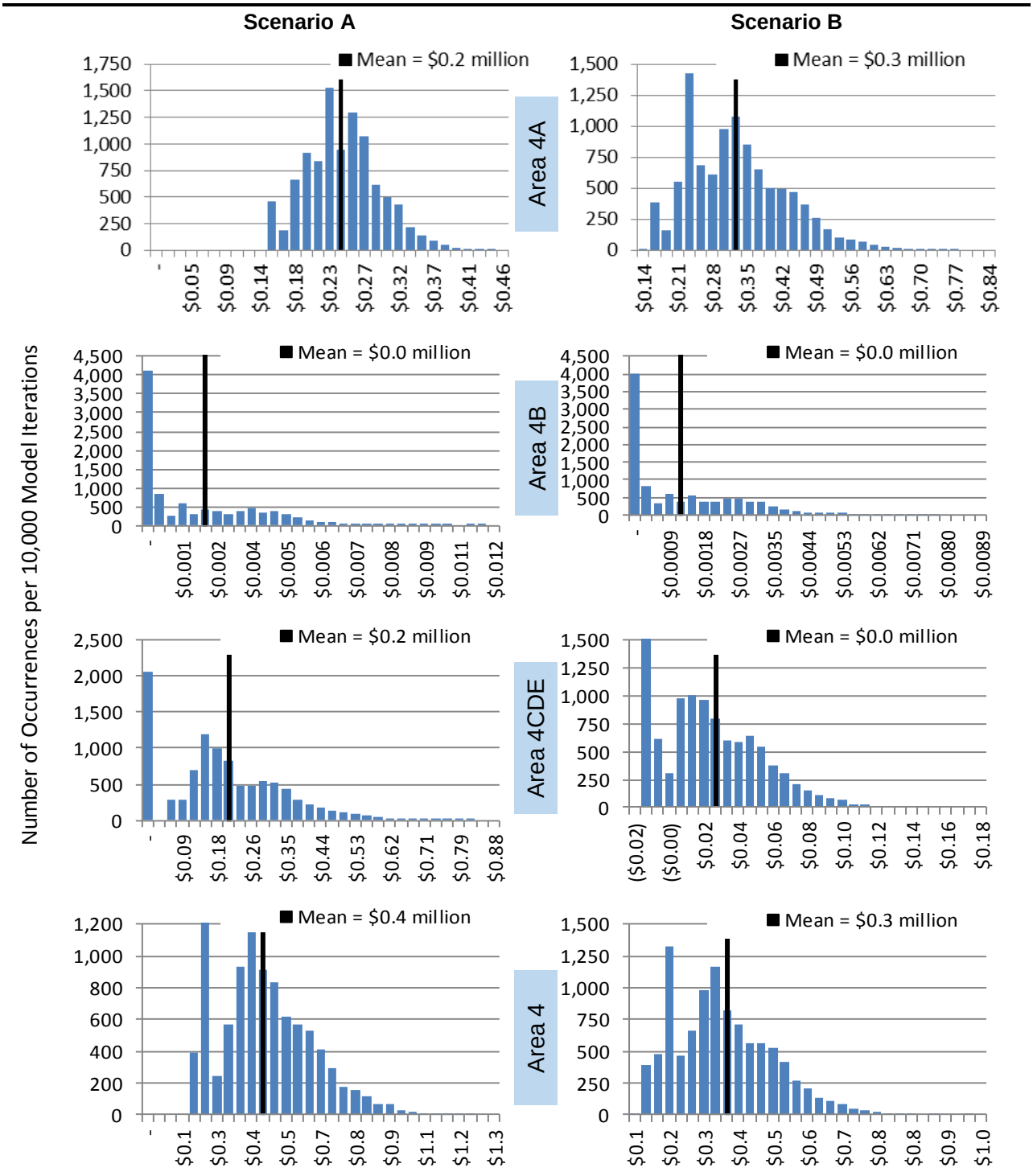
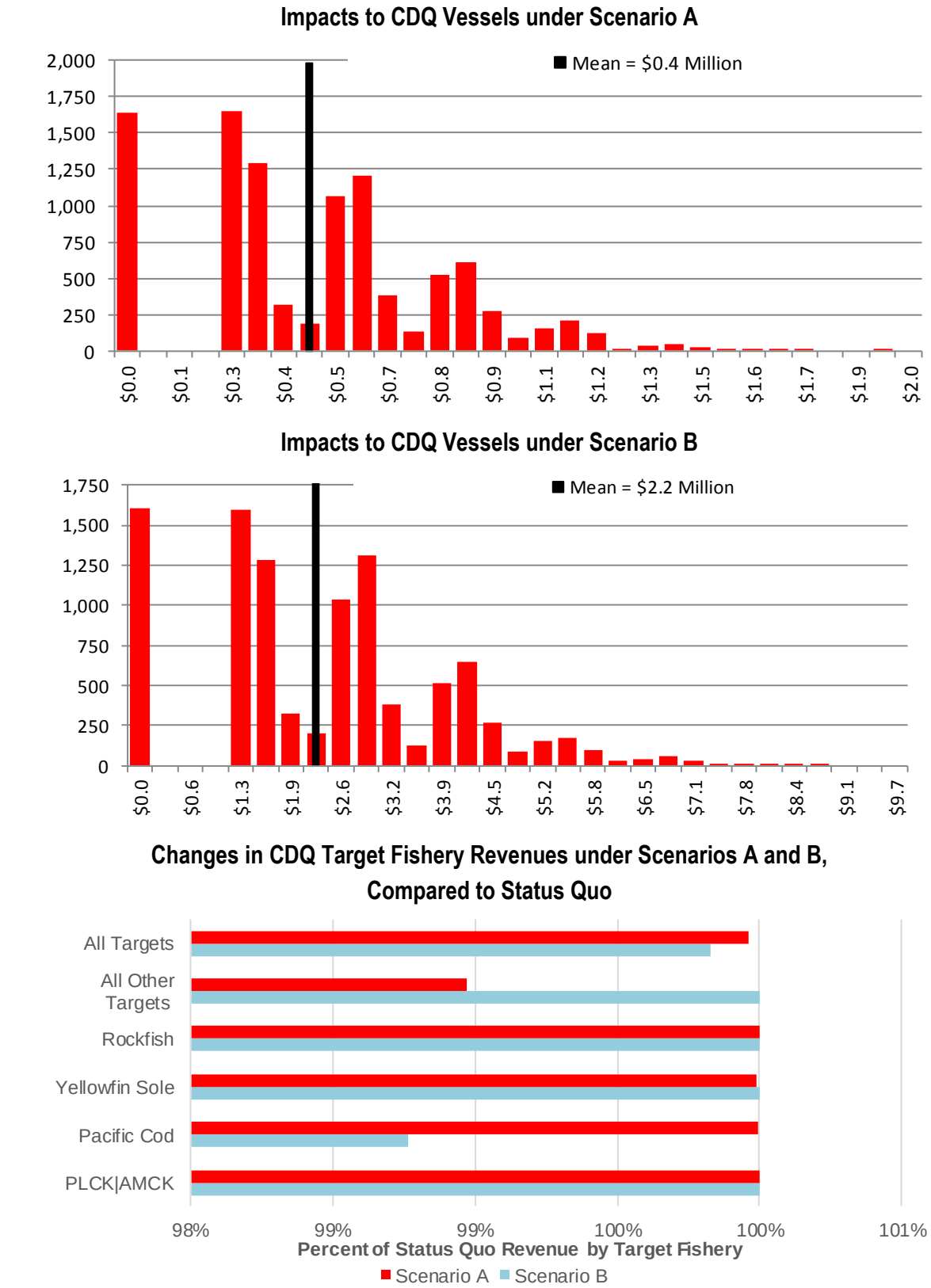


Figure 60 Impacts to CDQ Participants under Option 6d): 35 Percent Reduction of PSC Limits



e. Option 6—Suboption e: Reduce Halibut PSC Limits for CDQ Fisheries

Table 42 Statistical Details of the IMS Model Runs for Option 6e): 40 Percent Reduction of PSC Limits for CDQ Fisheries

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	1,341	260	-	-	1,383	304	-	165	181
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	-	-	-	-	-	($0.02)	-	-	-
Maximum Change in Magnitude of DPV	$2.17	$0.03	$1.59	$2.92	$1.42	$0.03	$2.01	$3.06	($10.91)	($25.82)
Mean Change in DPV	$0.64	$0.01	$0.35	$0.99	$0.37	$0.01	$0.67	$1.05	($2.67)	($9.27)
Standard Deviation of Changes in DPV	$0.79	$0.00	$0.25	$0.79	$0.75	$0.00	$0.35	$0.81	$1.78	$4.25
Median Change in DPV	$0.96	$0.00	$0.32	$1.18	$0.79	$0.00	$0.65	$1.19	($2.67)	($8.83)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-4.1	0.0	-3.5	-7.6	-1.6	0.0	-6.7	-8.3	-7.6	-8.3
Mean Annual Change in Directed Catch (Net Weight MT)	2.5	0.0	1.5	4.0	1.4	0.0	2.9	4.3	-	-
Mean Change in DPV ($2013 million) per annual change in halibut (mt)	$0.25	$0.20	$0.24	$0.25	$0.27	$0.20	$0.23	$0.25	$0.35	$1.12

Table 43 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 6e): 40 Percent Reduction of PSC Limits for CDQ Fisheries

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	1.1	3.2	0.6	4.9	1.2	3.5	0.7	5.3
Average Annual Average over Last 5 years (2019–2023)	0.2	0.6	0.1	1.0	0.2	0.7	0.1	1.1
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.02	$0.06	$0.01	$0.09	$0.02	$0.06	$0.01	$0.10
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	0.4	1.2	0.2	1.9	0.5	1.4	0.3	2.1
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.01	$0.02	$0.00	$0.03	$0.01	$0.02	$0.00	$0.04

Figure 61 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 6e): 40 Percent Reduction of PSC Limits for CDQ Fisheries

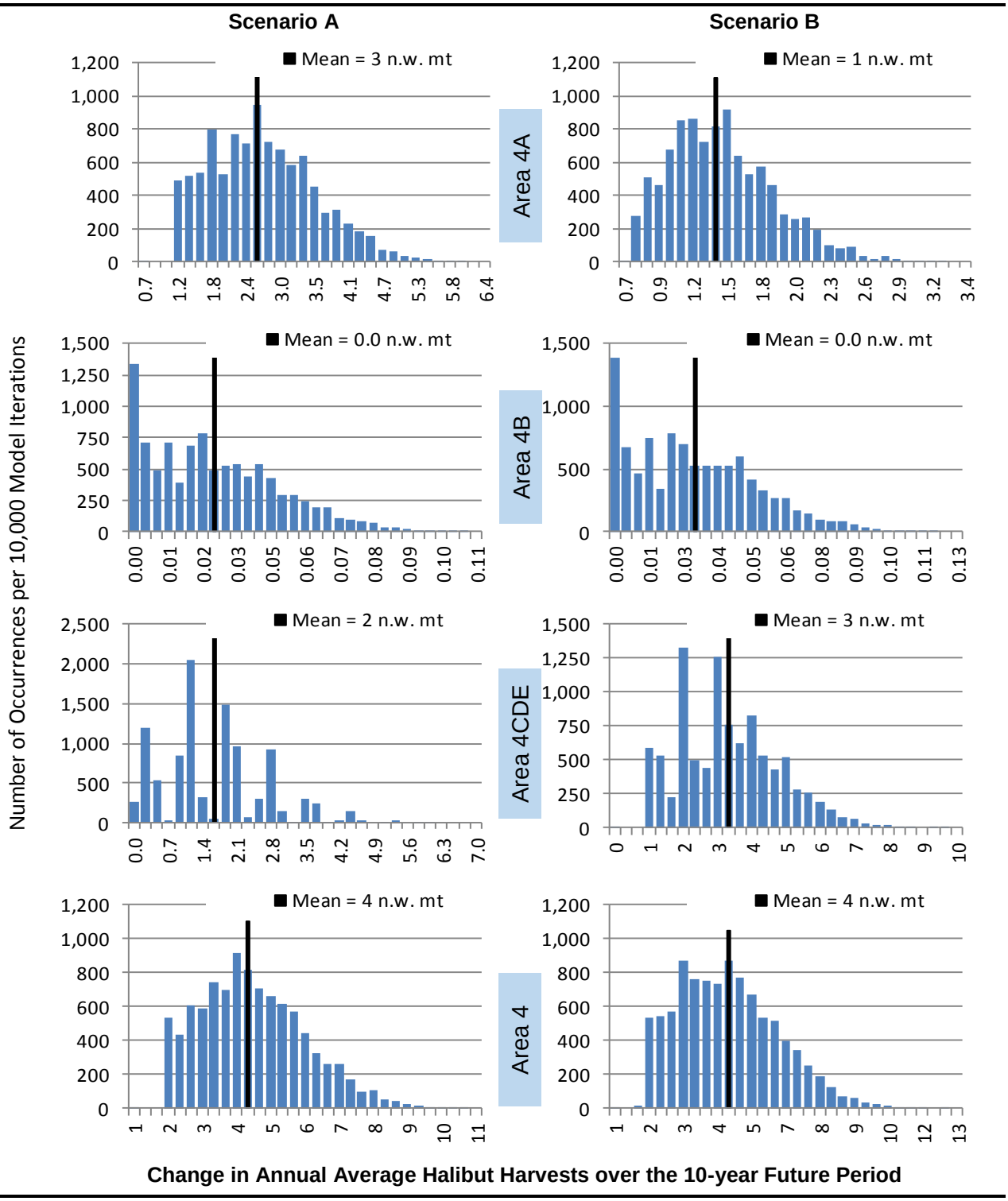


Figure 62 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 6e): 40 Percent Reduction of PSC Limits for CDQ Fisheries

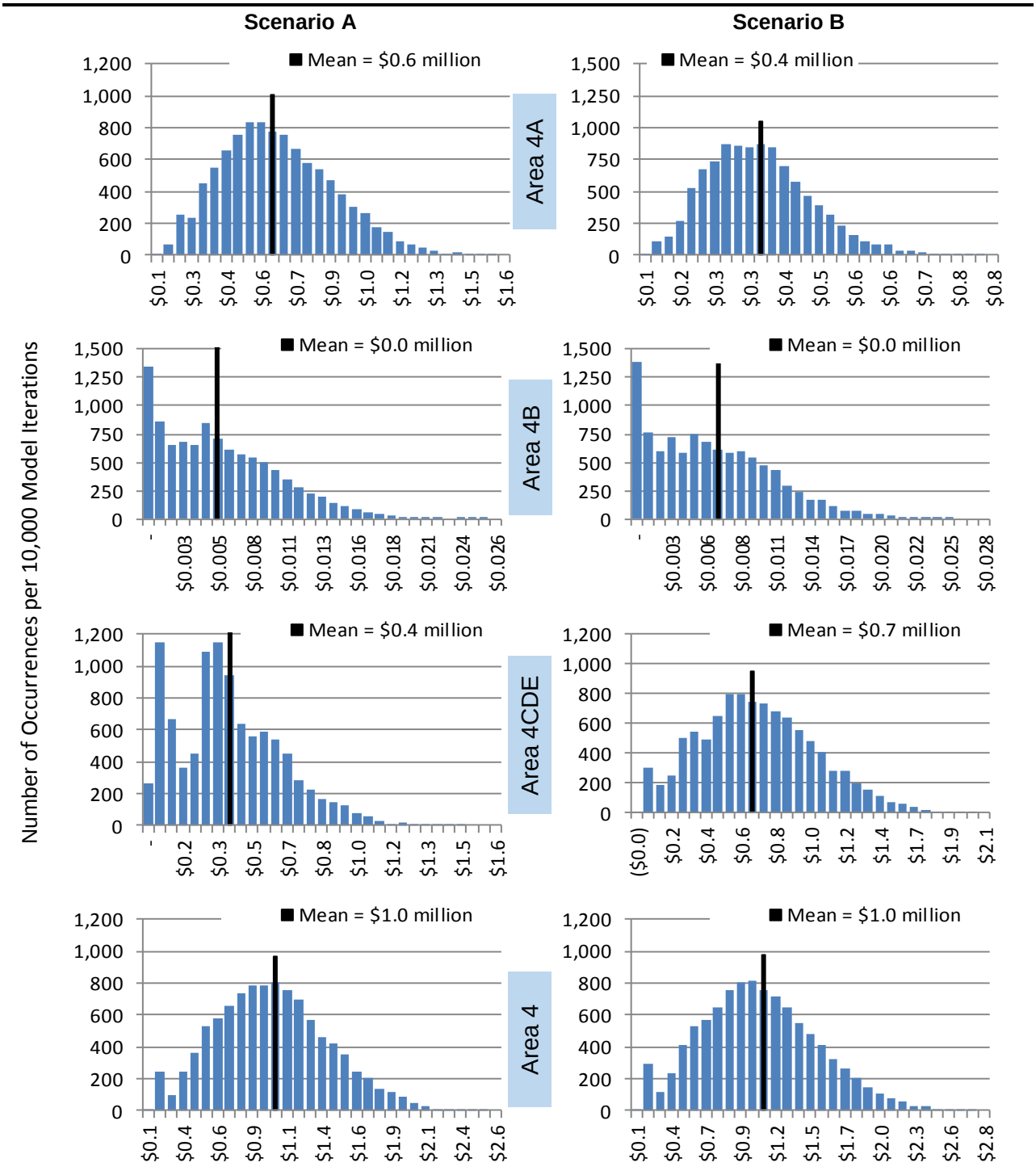
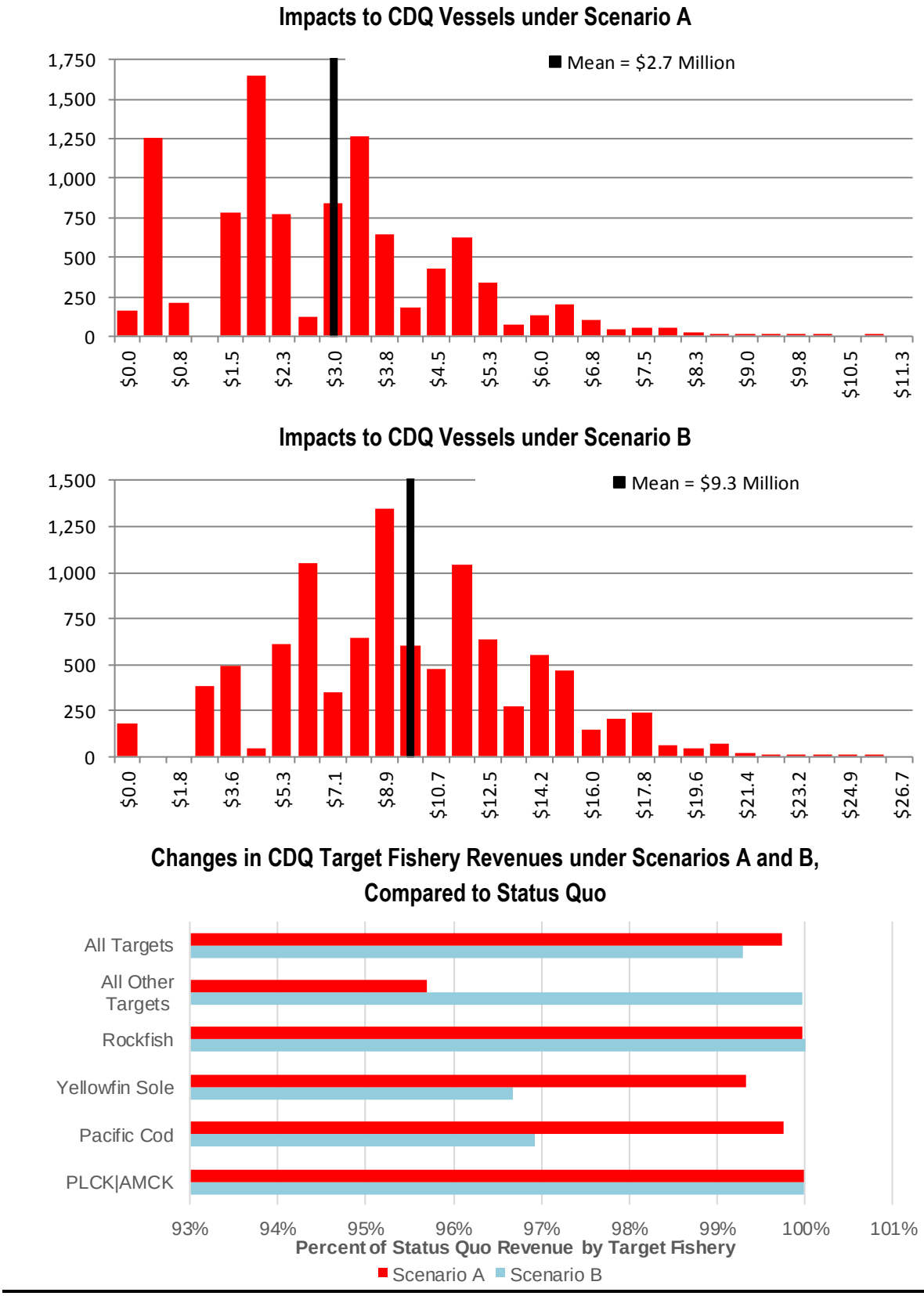


Figure 63 Impacts to CDQ Participants under Option 6e): 40 Percent Reduction of PSC Limits



f. Option 6—Suboption f: Reduce Halibut PSC Limits for CDQ Fisheries by 45 Percent

Table 44 Statistical Details of the IMS Model Runs for Option 6f): 45 Percent Reduction of PSC Limits for CDQ Fisheries

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	286	14	-	-	159	22	-	7	10
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	-	-	-	-	-	($0.02)	-	-	-
Maximum Change in Magnitude of DPV	$3.06	$0.05	$3.49	$5.40	$1.94	$0.05	$3.64	$5.51	($18.71)	($48.73)
Mean Change in DPV	$0.84	$0.01	$1.26	$2.11	$0.63	$0.01	$1.35	$1.99	($6.25)	($21.19)
Standard Deviation of Changes in DPV	$0.85	$0.01	$0.53	$1.02	$0.77	$0.01	$0.61	$1.05	$2.93	$7.39
Median Change in DPV	$1.08	$0.01	$1.23	$2.14	$0.95	$0.01	$1.32	$2.01	($6.02)	($21.00)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-6.0	0.0	-12.1	-18.1	-4.0	0.0	-13.1	-17.1	-18.1	-17.1
Mean Annual Change in Directed Catch (Net Weight MT)	3.4	0.1	5.3	8.8	2.5	0.1	5.8	8.3	-	-
Mean Change in DPV (2013$ million) per annual change in halibut (mt)	$0.24	$0.20	$0.24	$0.24	$0.25	$0.20	$0.23	$0.24	$0.35	$1.24

Table 45 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 6f): 45 Percent Reduction of PSC Limits for CDQ Fisheries

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	2.6	7.5	1.5	11.5	2.4	7.0	1.4	10.8
Average Annual Average over Last 5 years (2019–2023)	0.5	1.5	0.3	2.3	0.5	1.4	0.3	2.2
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.05	$0.14	$0.03	$0.22	$0.05	$0.13	$0.03	$0.20
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	1.0	2.9	0.6	4.5	1.0	2.8	0.5	4.3
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.02	$0.05	$0.01	$0.08	$0.02	$0.05	$0.01	$0.08

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Figure 64 **Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 6f): 45 Percent Reduction of PSC Limits for CDQ Fisheries**

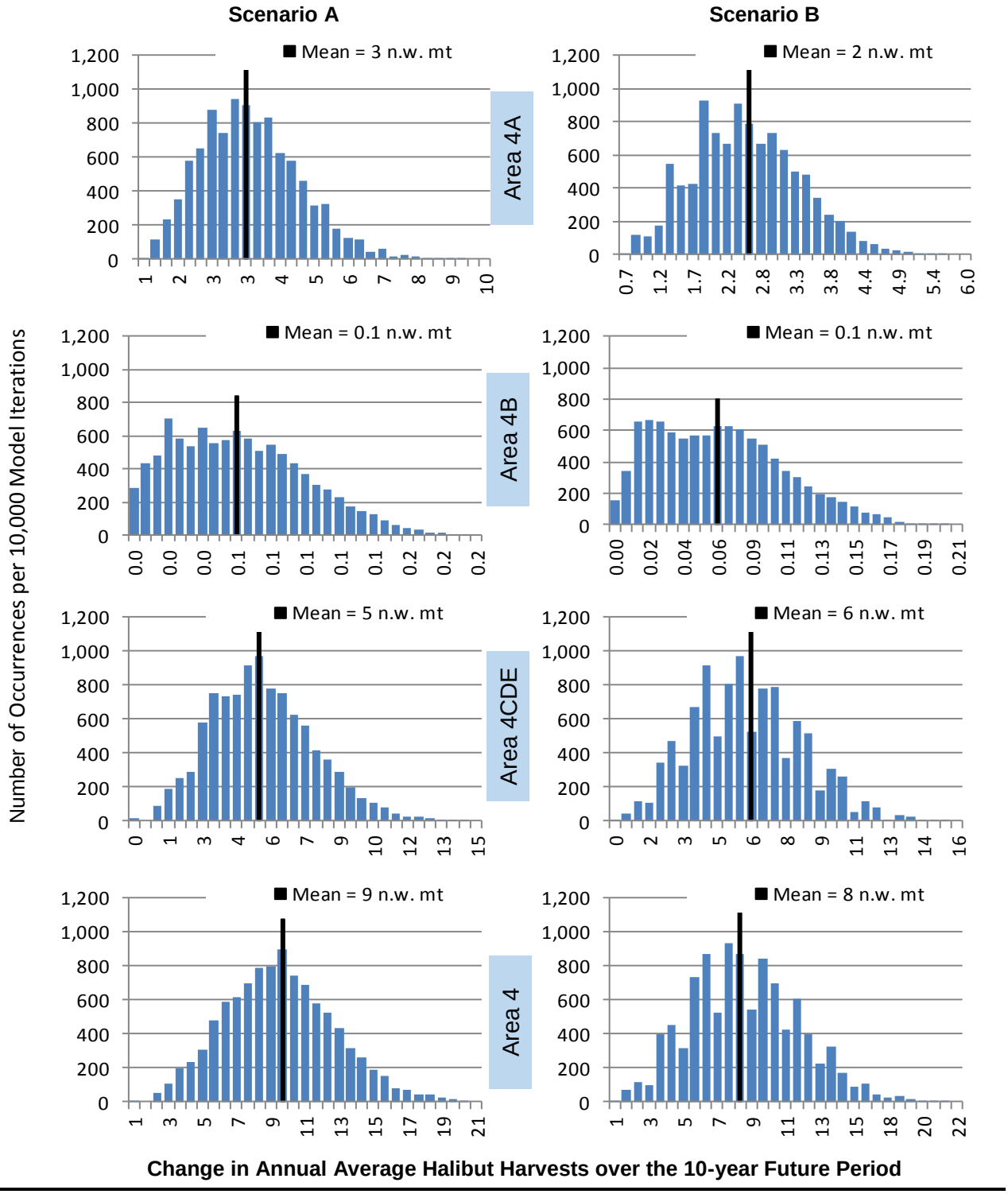


Figure 65 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 6f): 45 Percent Reduction of PSC Limits for CDQ Fisheries

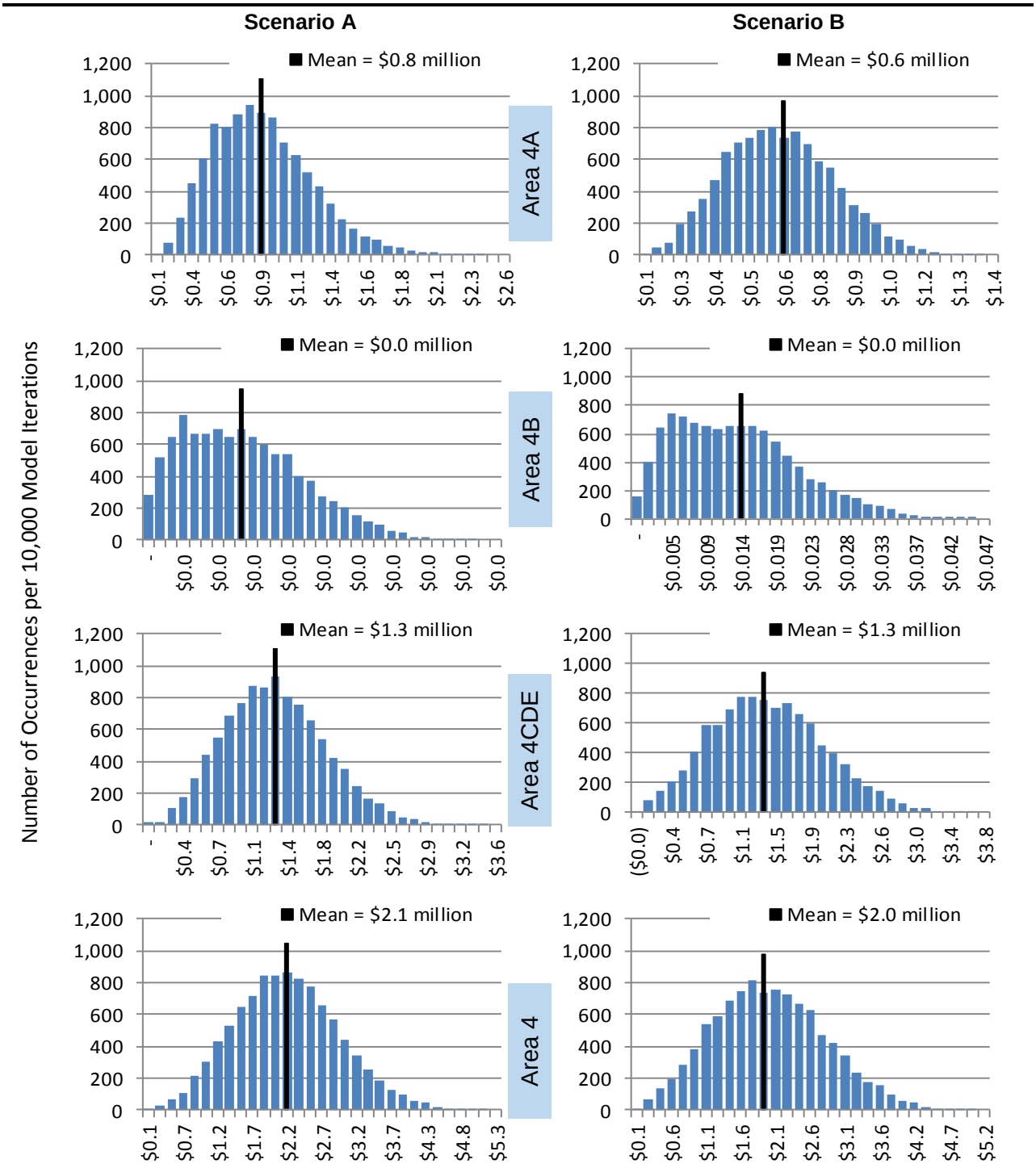
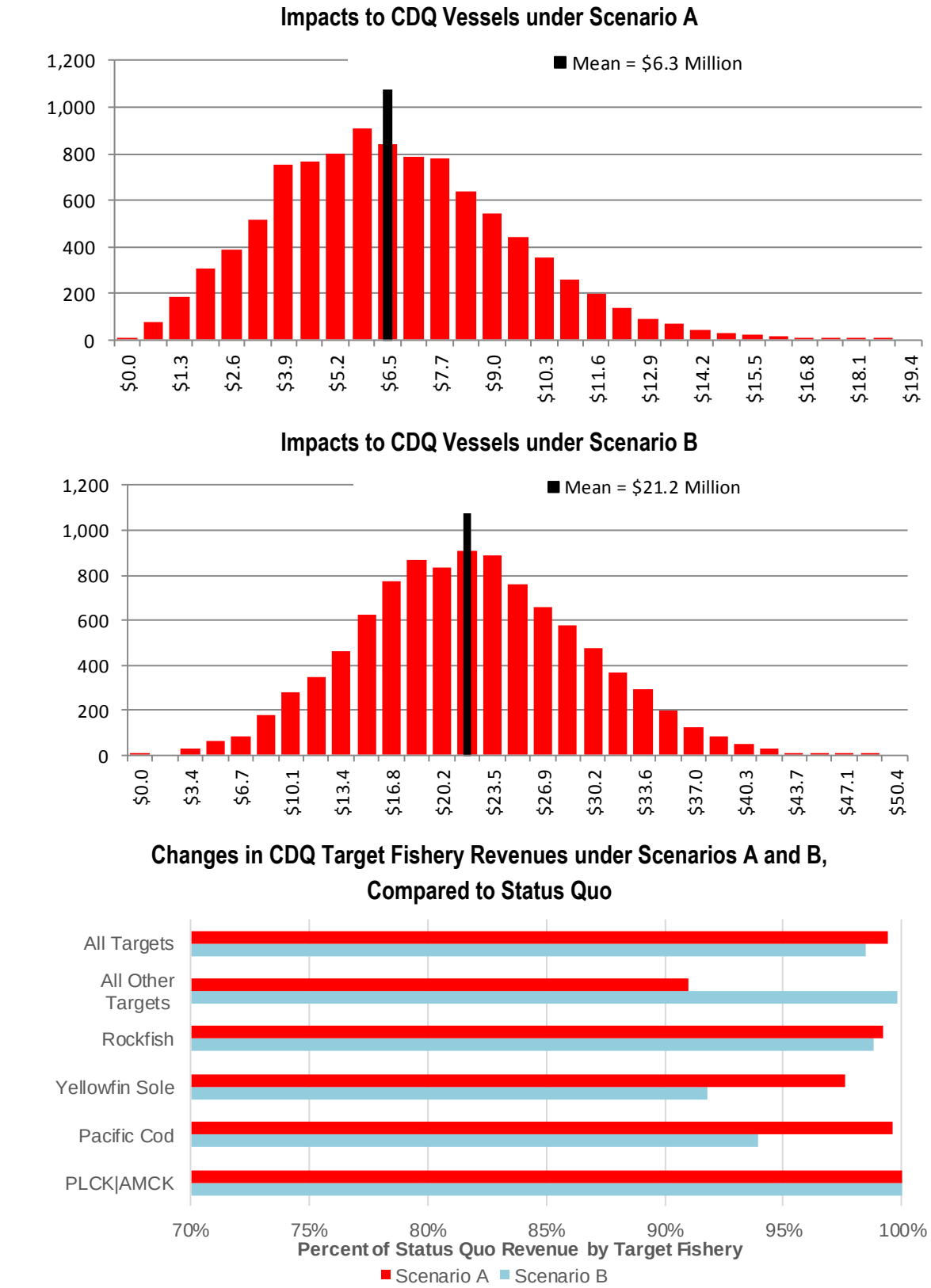


Figure 66 Impacts to CDQ Participants under Option 6f): 45 Percent Reduction of PSC Limits



g. Option 6—Suboption g: Reduce Halibut PSC Limits for CDQ Fisheries

Table 46 Statistical Details of the IMS Model Runs for Option 6g): 50 Percent Reduction of PSC Limits for CDQ Fisheries

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	8	-	-	-	14	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	-	$0.02	-	-	-	$0.06	-	($0.68)	($3.18)
Maximum Change in Magnitude of DPV	$3.27	$0.21	$5.38	$7.43	$2.26	$0.77	$4.75	$6.96	($40.07)	($65.73)
Mean Change in DPV	$1.28	$0.08	$2.09	$3.44	$0.72	$0.16	$2.35	$3.23	($15.23)	($36.68)
Standard Deviation of Changes in DPV	$0.87	$0.03	$0.81	$1.25	$0.77	$0.12	$0.69	$1.19	$5.64	$8.89
Median Change in DPV	$1.56	$0.07	$2.05	$3.46	$1.02	$0.14	$2.35	$3.26	($14.78)	($36.79)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-9.9	-0.5	-20.0	-30.4	-4.9	-1.3	-22.3	-28.6	-30.4	-28.6
Mean Annual Change in Directed Catch (Net Weight MT)	5.2	0.3	8.9	14.5	2.9	0.7	10.0	13.6	-	-
Mean Change in DPV ($2013 million) per annual change in halibut (mt)	$0.24	$0.23	$0.23	$0.24	$0.24	$0.23	$0.24	$0.24	$0.50	$1.28

Table 47 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option 6g): 50 Percent Reduction of PSC Limits for CDQ Fisheries

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	4.2	12.3	2.4	18.9	4.1	11.7	2.3	18.1
Average Annual Average over Last 5 years (2019–2023)	0.8	2.5	0.5	3.8	0.8	2.3	0.5	3.6
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.08	$0.22	$0.05	$0.36	$0.08	$0.21	$0.05	$0.34
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	1.7	4.8	1.0	7.5	1.6	4.6	0.9	7.1
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.03	$0.08	$0.02	$0.13	$0.03	$0.08	$0.02	$0.13

Figure 67 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option 6g): 50 Percent Reduction of PSC Limits for CDQ Fisheries

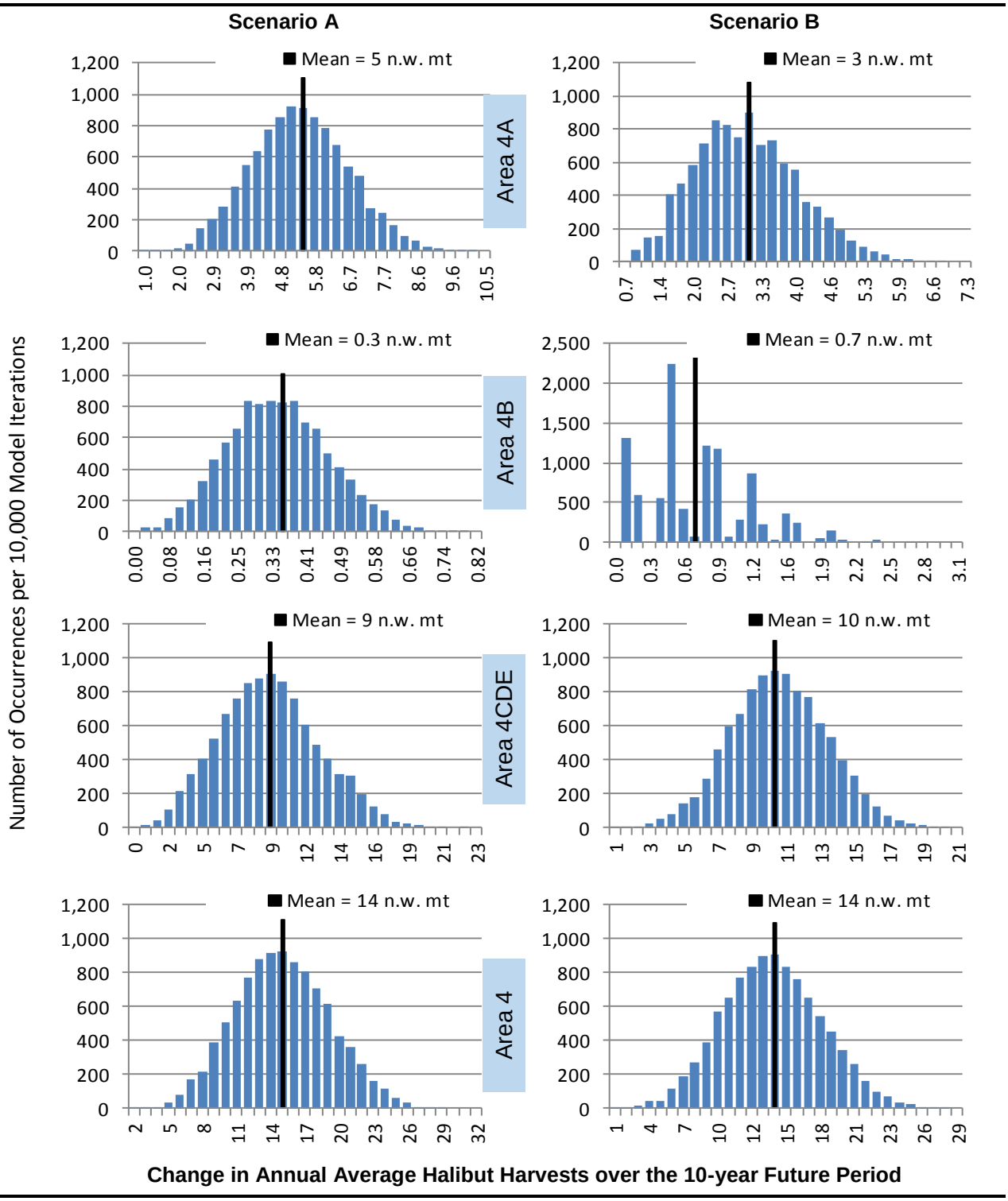


Figure 68 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option 6g): 50 Percent Reduction of PSC Limits for CDQ Fisheries

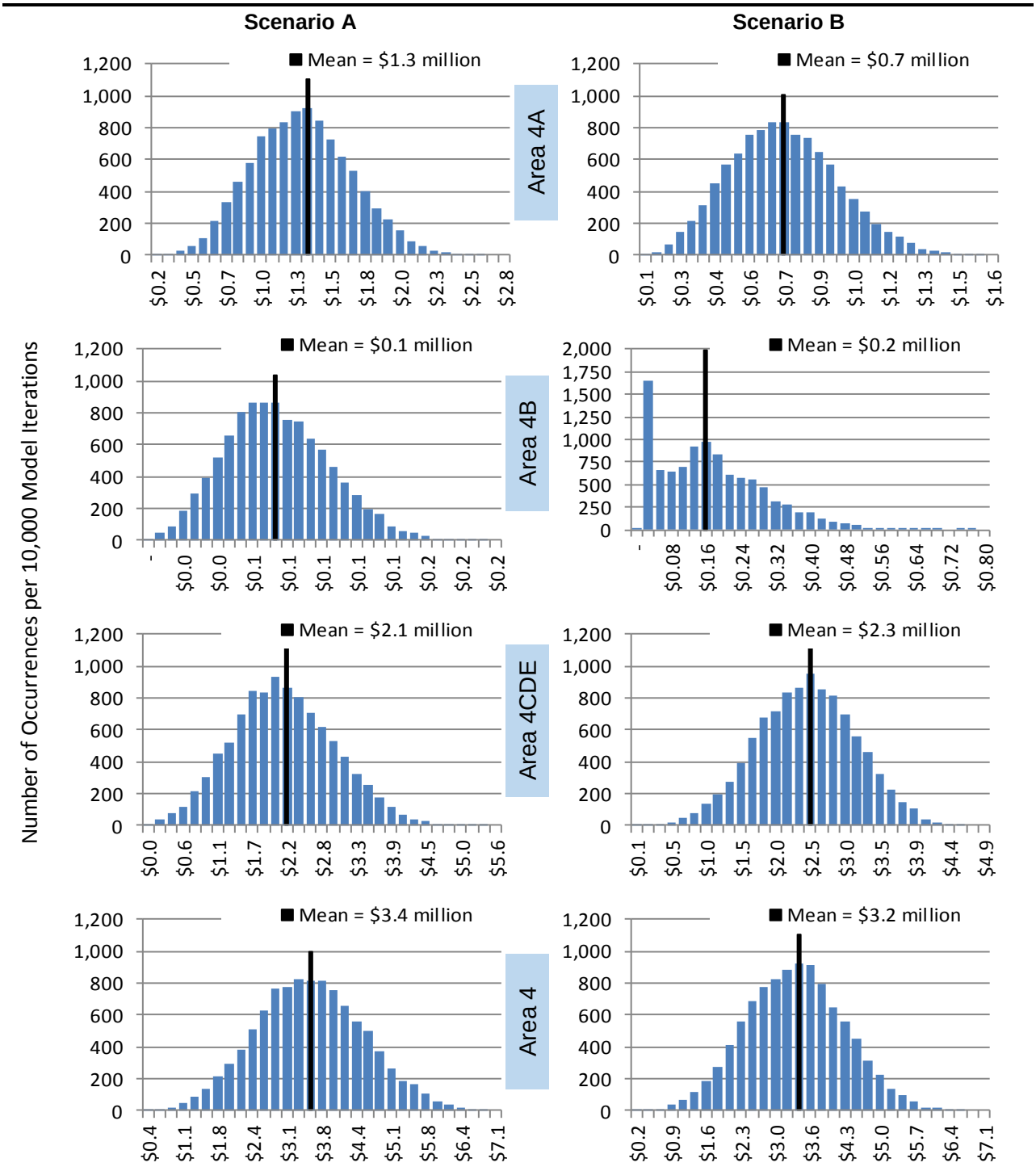
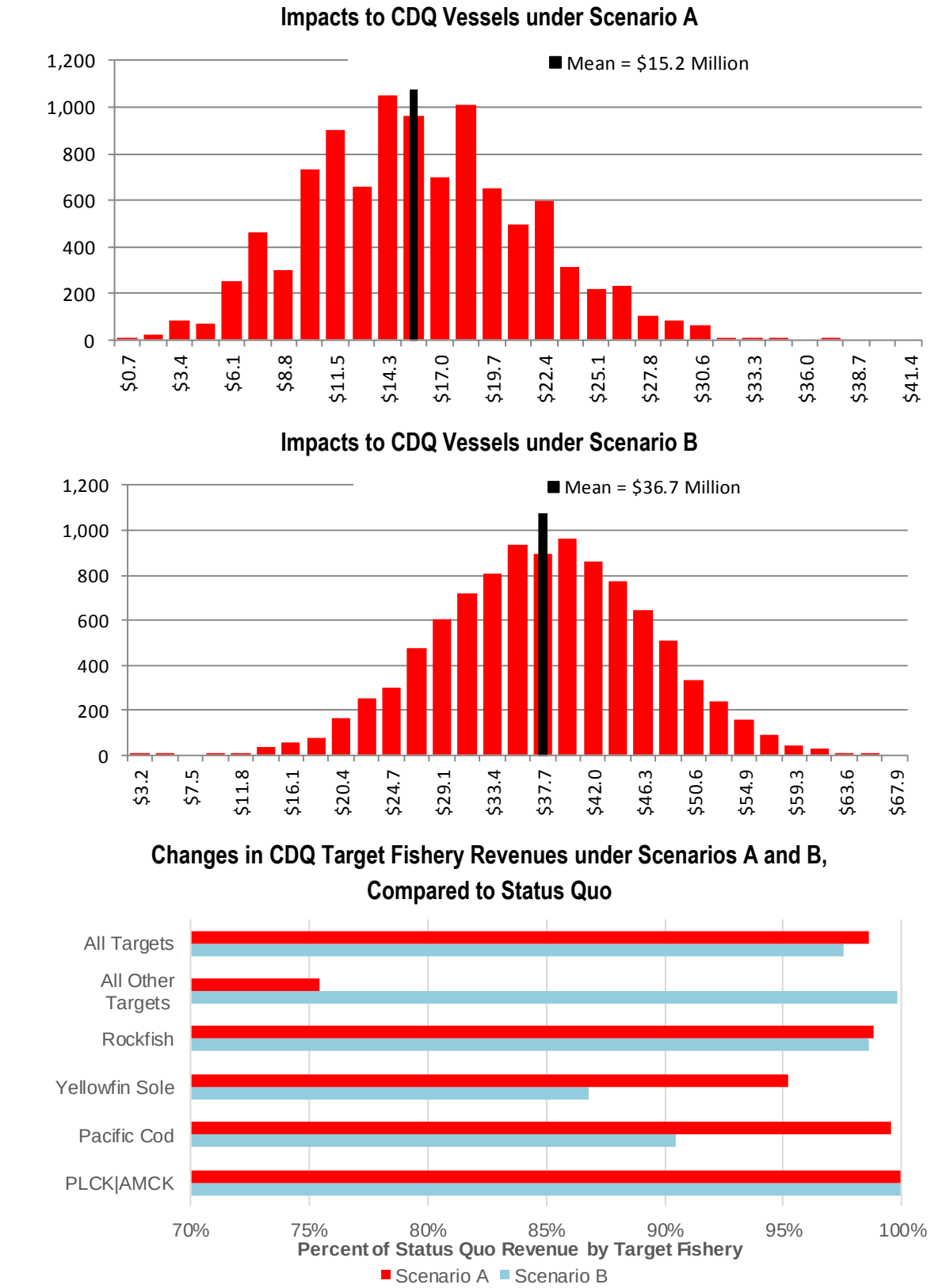


Figure 69 Impacts to CDQ Participants under Option 6g): 50 Percent Reduction of PSC Limits



7. All Sectors Combined

This section summarizes estimated impacts given uniform halibut PSC limit reductions across all affected sectors and fishery groups. Although there isn't a specific option for reducing halibut PSC limits across all potentially affected sectors and fishery groups, these results are a possibility given the appropriate set of suboptions. More importantly, these results lend insight into the cumulative impacts on both BSAI groundfish fisheries and the directed halibut fishery.

a. All Sectors: Reduce Halibut PSC Limits by 10 Percent

Table 48 Statistical Details of the IMS Model Runs for Option All Sectors: 10 Percent Reduction of PSC Limits

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	26	1	-	-	1	-	-	1	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	-	-	-	-	-	$0.19	-	-	($0.27)
Maximum Change in Magnitude of DPV	$8.55	$0.13	$7.82	$16.37	$3.90	$0.64	$17.07	$19.73	($23.19)	($95.31)
Mean Change in DPV	$2.71	$0.04	$3.02	$5.77	$1.80	$0.21	$6.28	$8.29	($9.94)	($47.06)
Standard Deviation of Changes in DPV	$1.49	$0.02	$1.22	$2.53	$0.82	$0.10	$2.36	$2.61	$3.25	$13.06
Median Change in DPV	$2.59	$0.04	$2.94	$5.52	$1.90	$0.21	$6.09	$8.16	($9.88)	($47.11)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-23.8	-0.1	-28.8	-52.7	-14.9	-1.6	-59.3	-75.8	-52.7	-75.8
Mean Annual Change in Directed Catch (Net Weight MT)	11.3	0.2	12.9	24.4	7.5	0.9	26.7	35.2	-	-
Mean Change in DPV (2013$ million) per annual change in halibut (mt)	$0.24	$0.21	$0.23	$0.24	$0.24	$0.23	$0.24	$0.24	$0.19	$0.62

Table 49 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option All Sectors: 10 Percent Reduction of PSC Limits

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	7.4	21.3	4.2	32.8	10.6	30.6	6.0	47.1
Average Annual Average over Last 5 years (2019–2023)	1.5	4.3	0.8	6.6	2.1	6.1	1.2	9.4
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.15	$0.39	$0.08	$0.62	$0.21	$0.56	$0.12	$0.89
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	2.9	8.3	1.6	12.9	4.2	12.0	2.4	18.6
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.05	$0.14	$0.03	$0.23	$0.08	$0.21	$0.04	$0.33

Figure 70 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option All Sectors: 10 Percent Reduction of PSC Limits

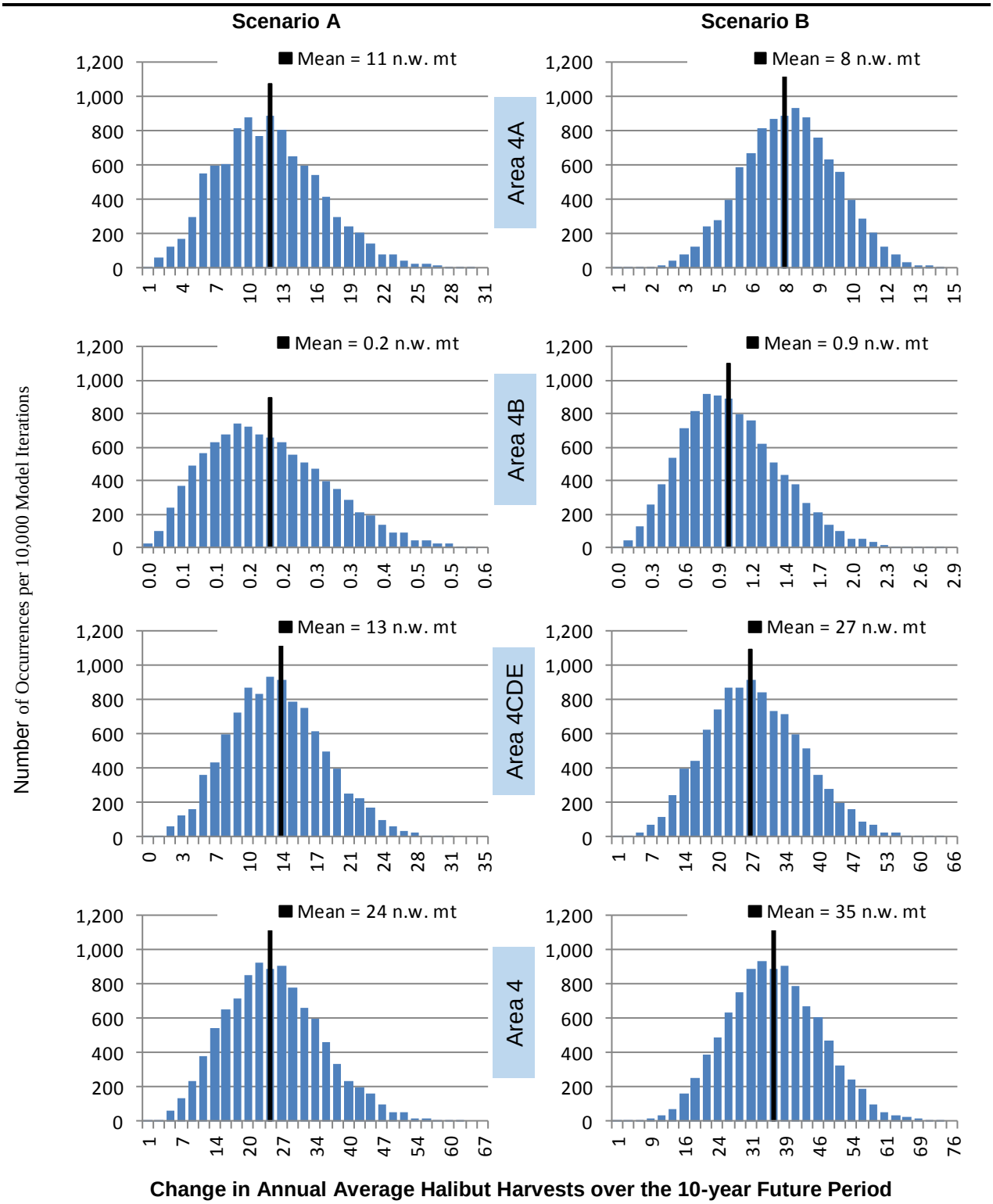


Figure 71 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option All Sectors: 10 Percent Reduction of PSC Limits

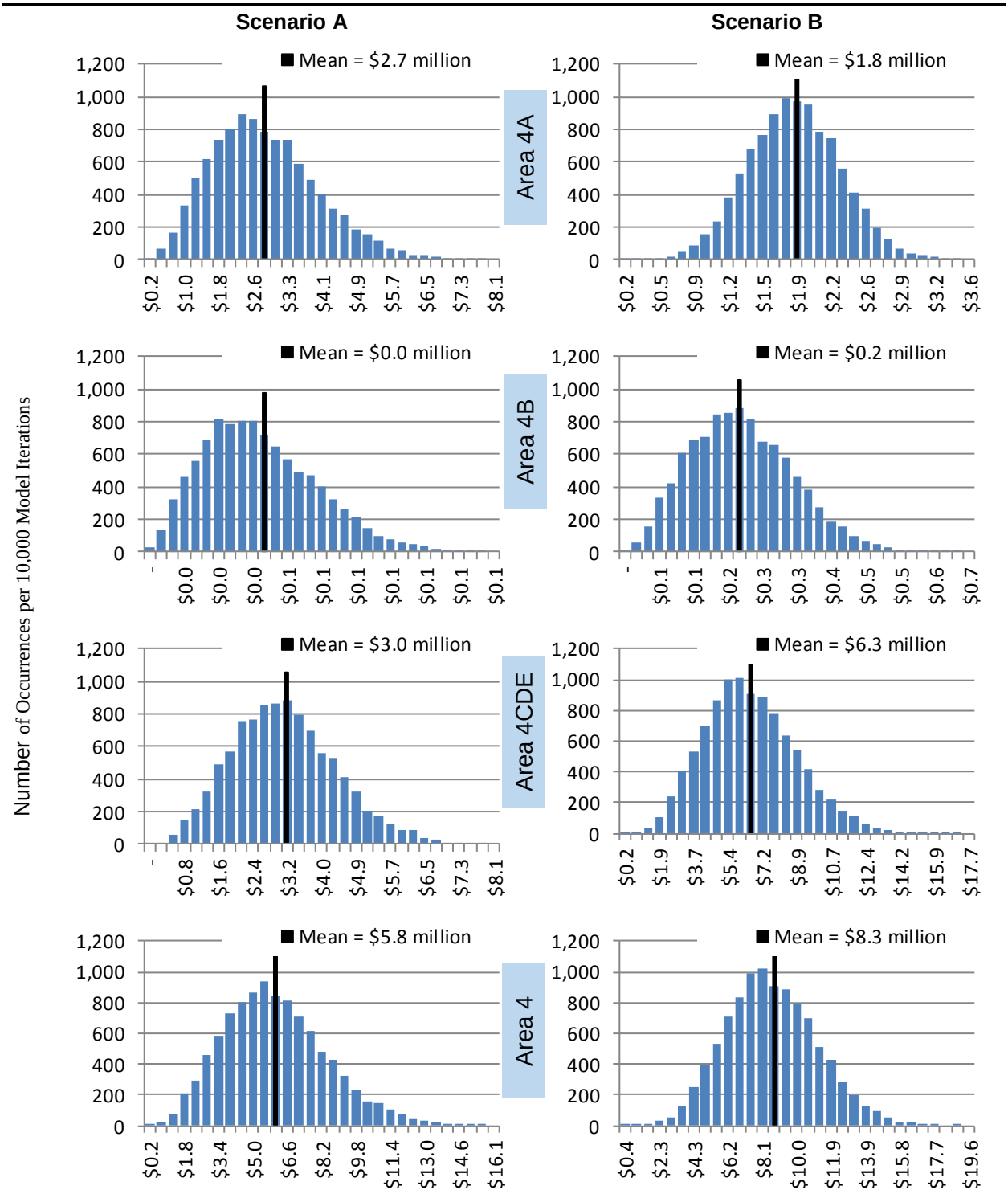
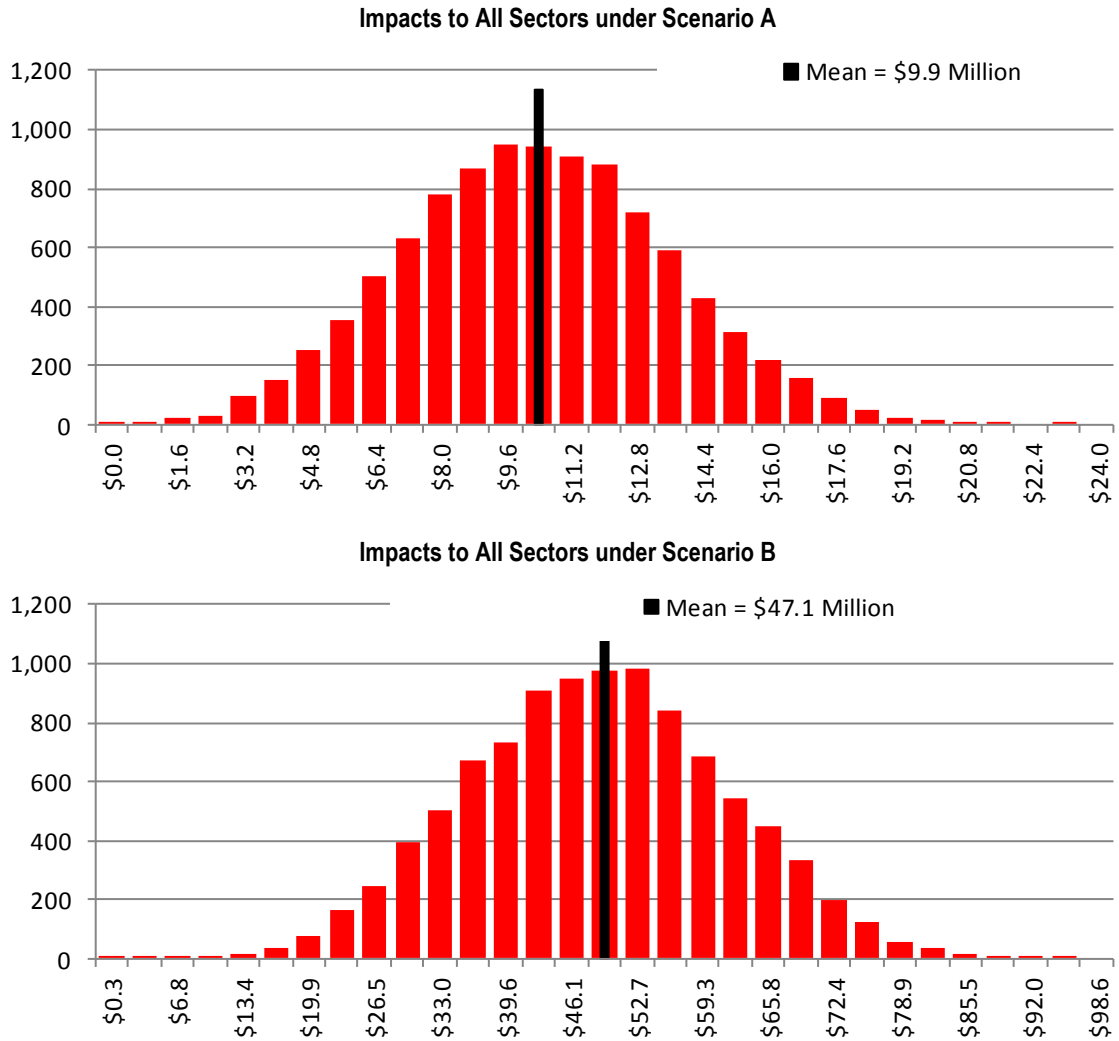


Figure 72 Impacts to All Groundfish Sectors under the "a" Options: 10 Percent Reduction of PSC Limits



b. All Sectors: Reduce Halibut PSC Limits by 20 Percent

Table 50 Statistical Details of the IMS Model Runs for Option All Sectors: 20 Percent Reduction of PSC Limits

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	1	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	-	$3.44	-	-	$0.03	$8.24	-	($16.57)	($50.76)
Maximum Change in Magnitude of DPV	$15.33	$0.53	$31.12	$46.00	$8.87	$3.05	$40.24	$46.80	($107.23)	($302.82)
Mean Change in DPV	$10.13	$0.21	$14.09	$24.43	$4.42	$1.02	$23.00	$28.44	($58.41)	($180.09)
Standard Deviation of Changes in DPV	$1.61	$0.08	$4.06	$5.37	$1.15	$0.44	$4.49	$5.18	$13.67	$37.58
Median Change in DPV	$10.19	$0.21	$13.78	$24.15	$4.39	$0.98	$22.98	$28.50	($58.24)	($180.74)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-90.5	-0.8	-129.0	-220.2	-39.1	-8.4	-210.2	-257.6	-220.2	-257.6
Mean Annual Change in Directed Catch (Net Weight MT)	42.8	1.0	59.8	103.6	18.7	4.4	97.5	120.7	-	-
Mean Change in DPV ($2013 million) per annual change in halibut (mt)	$0.24	$0.21	$0.24	$0.24	$0.24	$0.23	$0.24	$0.24	$0.27	$0.70

Table 51 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option All Sectors: 20 Percent Reduction of PSC Limits

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	29.8	86.0	16.9	132.7	34.7	100.3	19.7	154.7
Average Annual Average over Last 5 years (2019–2023)	6.0	17.2	3.4	26.5	6.9	20.1	3.9	30.9
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$0.59	$1.57	$0.33	$2.50	$0.69	$1.83	$0.39	$2.92
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	11.7	33.8	6.7	52.2	13.7	39.5	7.8	60.9
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.22	$0.59	$0.12	$0.93	$0.26	$0.68	$0.15	$1.09

Figure 73 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option All Sectors: 20 Percent Reduction of PSC Limits

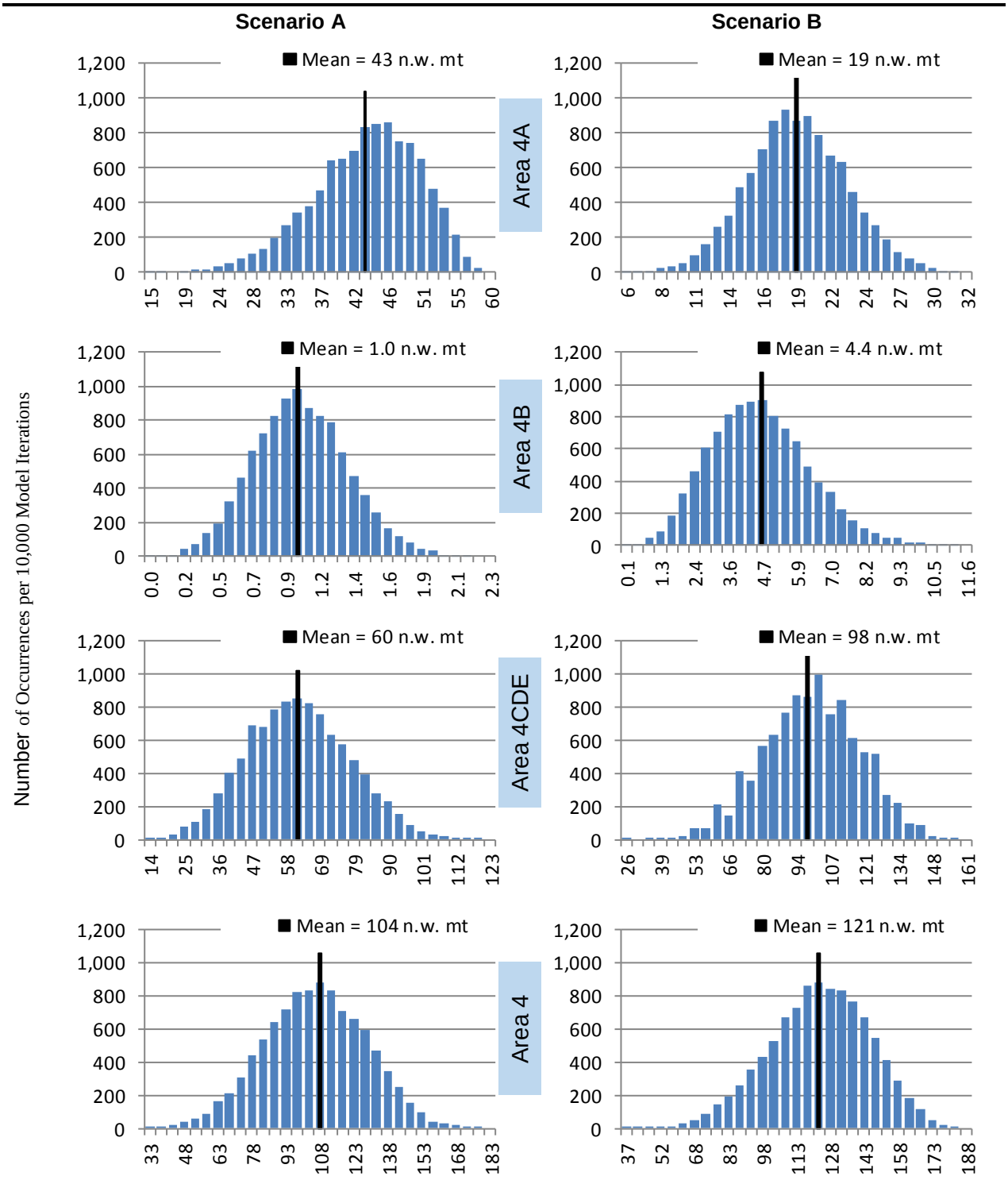


Figure 74 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option All Sectors: 20 Percent Reduction of PSC Limits

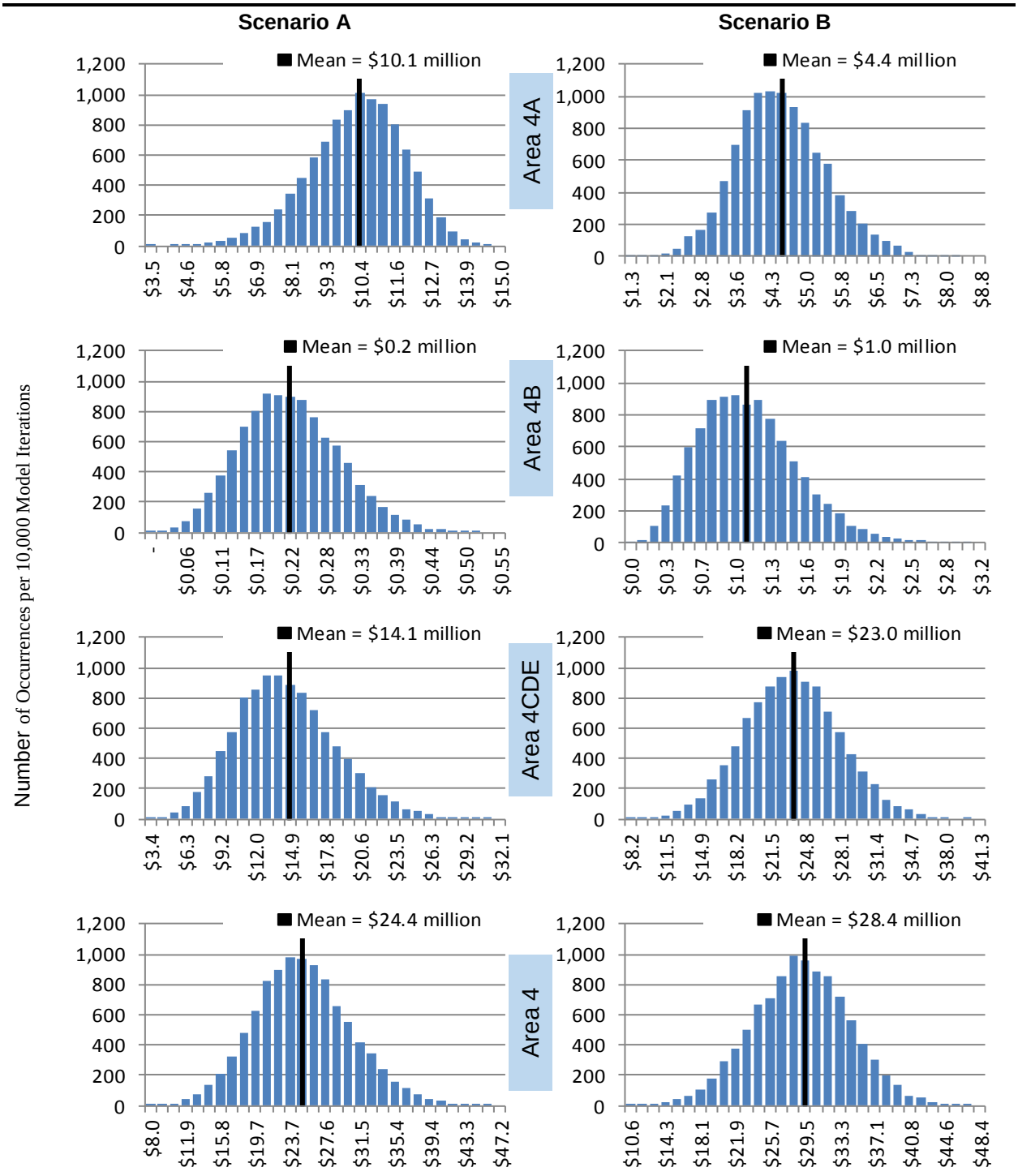
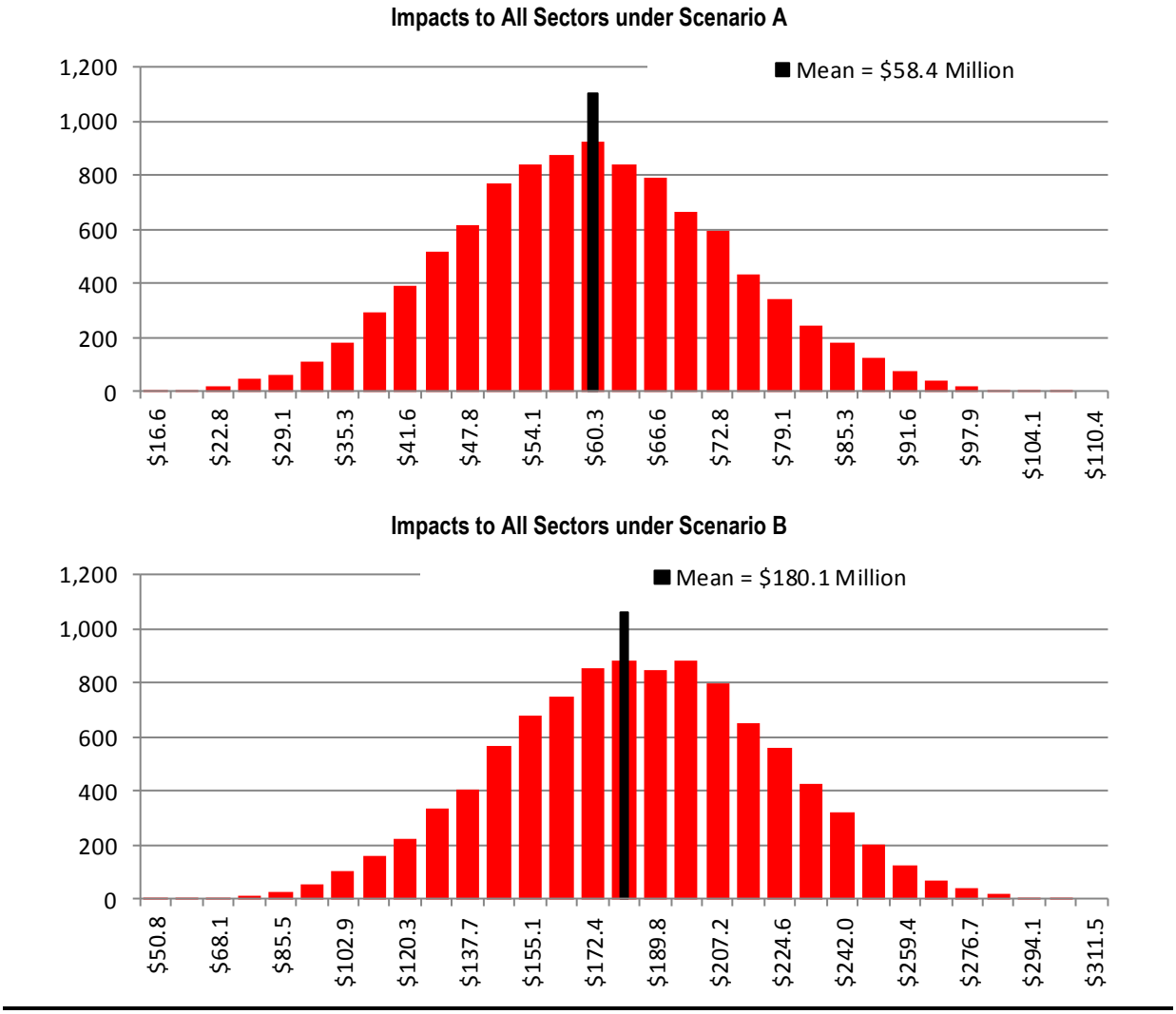


Figure 75 Impacts to to All Groundfish Sectors under the "b" Options: 20 Percent Reduction of PSC Limits



c. All Sectors: Reduce Halibut PSC Limits by 30 Percent

Table 52 Statistical Details of the IMS Model Runs for Option All Sectors: 30 Percent Reduction of PSC Limits

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$0.52	$16.36	-	-	$1.00	$26.07	-	($96.47)	($206.89)
Maximum Change in Magnitude of DPV	$28.42	$3.69	$54.54	$75.52	$19.09	$4.84	$63.38	$78.73	($283.84)	($546.76)
Mean Change in DPV	$18.79	$2.10	$32.26	$53.15	$10.51	$2.57	$46.04	$59.11	($173.90)	($393.01)
Standard Deviation of Changes in DPV	$2.28	$0.51	$5.22	$5.95	$1.57	$0.57	$5.13	$6.30	$26.90	$50.71
Median Change in DPV	$18.68	$2.10	$31.92	$53.07	$10.40	$2.55	$46.13	$59.18	($172.65)	($393.08)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-168.6	-16.0	-293.5	-478.1	-95.2	-20.9	-419.4	-535.5	-478.1	-535.5
Mean Annual Change in Directed Catch (Net Weight MT)	79.7	9.1	136.9	225.7	44.7	11.1	195.3	251.0	-	-
Mean Change in DPV (2013 million) per annual change in halibut (mt)	$0.24	$0.23	$0.24	$0.24	$0.24	$0.23	$0.24	$0.24	$0.36	$0.73

Table 53 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option All Sectors: 30 Percent Reduction of PSC Limits

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	63.9	184.8	36.4	285.1	72.3	209.2	41.1	322.7
Average Annual Average over Last 5 years (2019–2023)	12.8	37.0	7.3	57.0	14.5	41.8	8.2	64.5
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$1.28	$3.38	$0.72	$5.37	$1.44	$3.82	$0.81	$6.08
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	25.2	72.8	14.3	112.3	28.5	82.5	16.2	127.2
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.47	$1.26	$0.27	$2.00	$0.54	$1.43	$0.30	$2.26

Figure 76 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option All Sectors: 30 Percent Reduction of PSC Limits

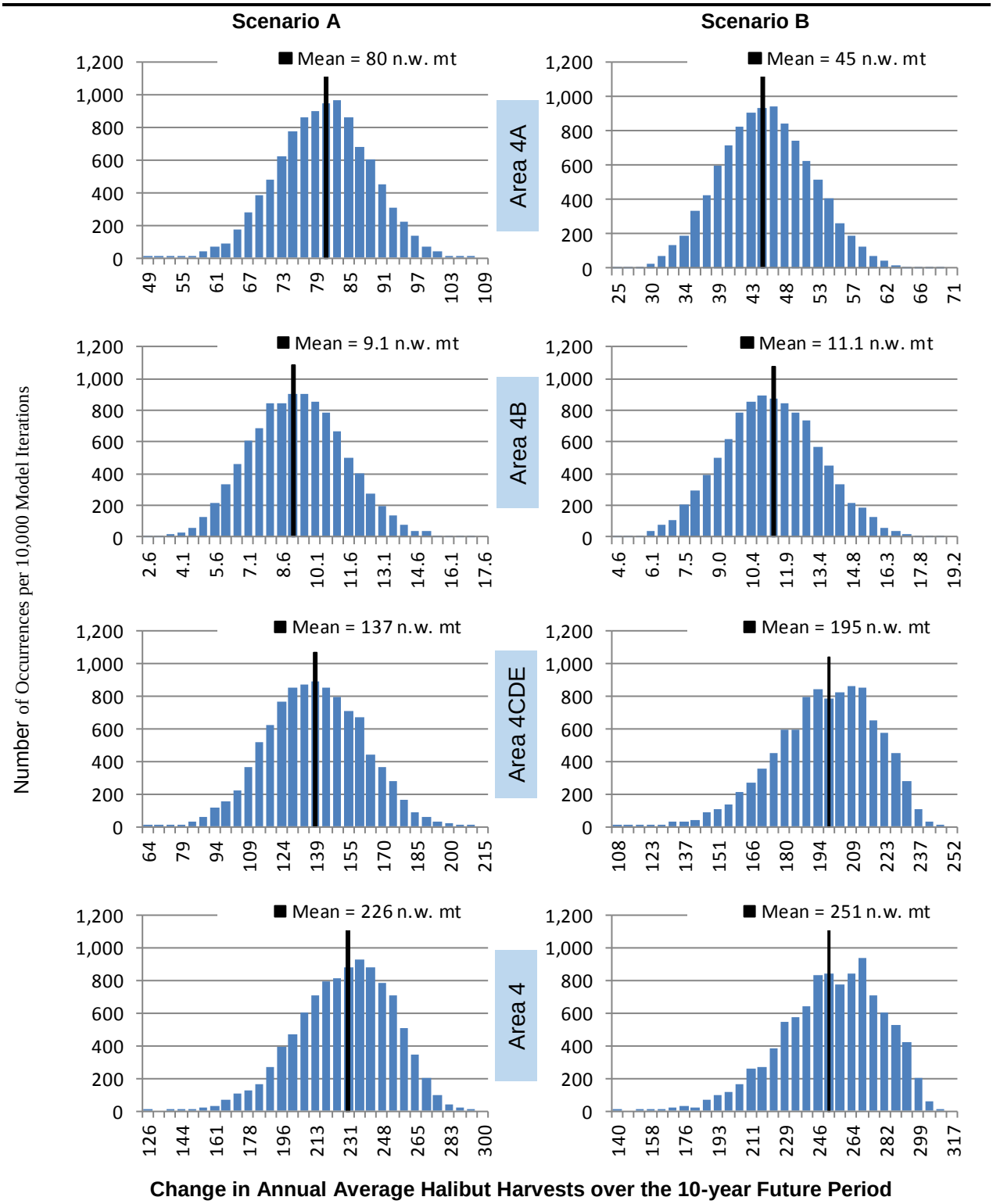


Figure 77 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option All Sectors: 30 Percent Reduction of PSC Limits

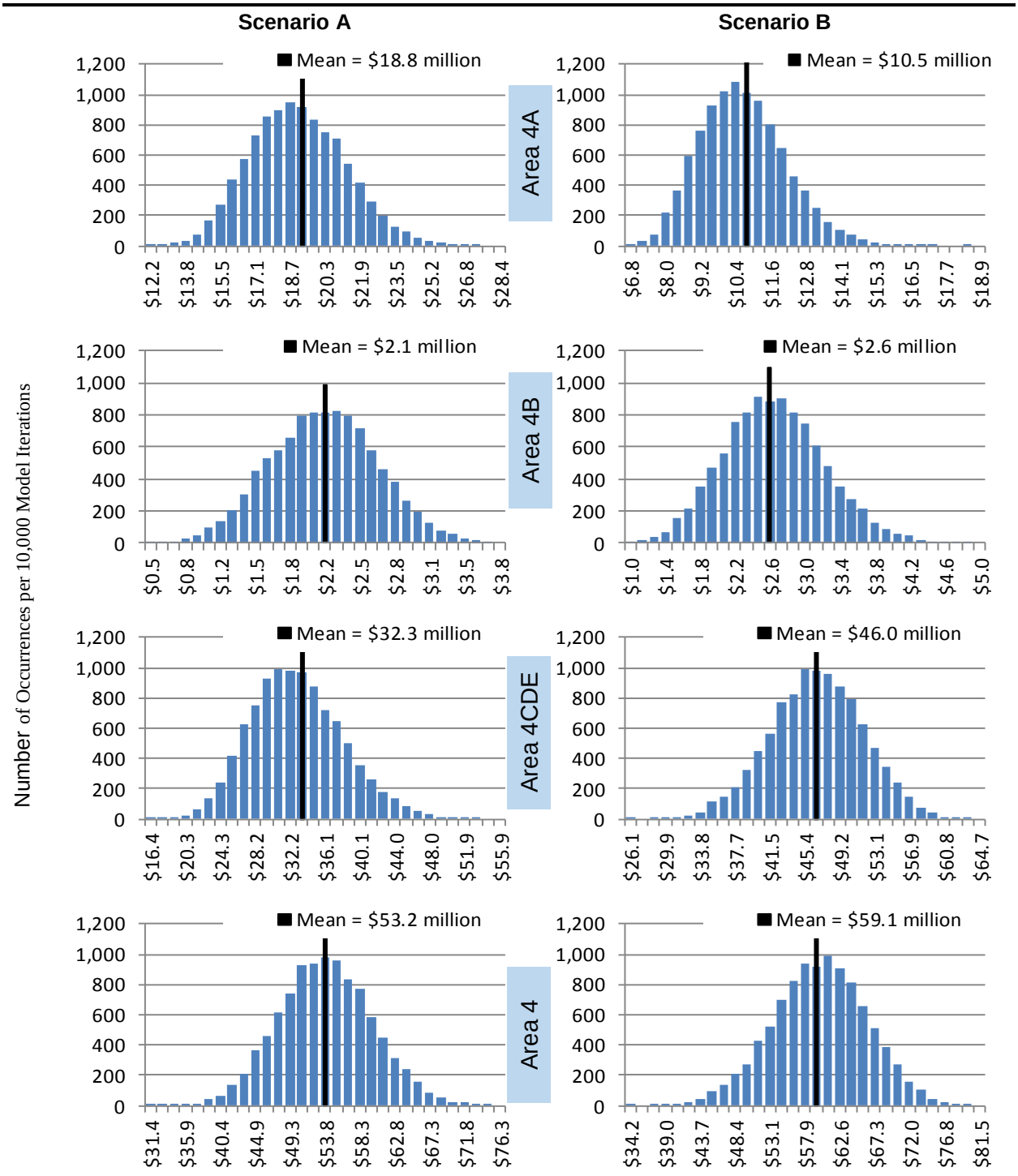
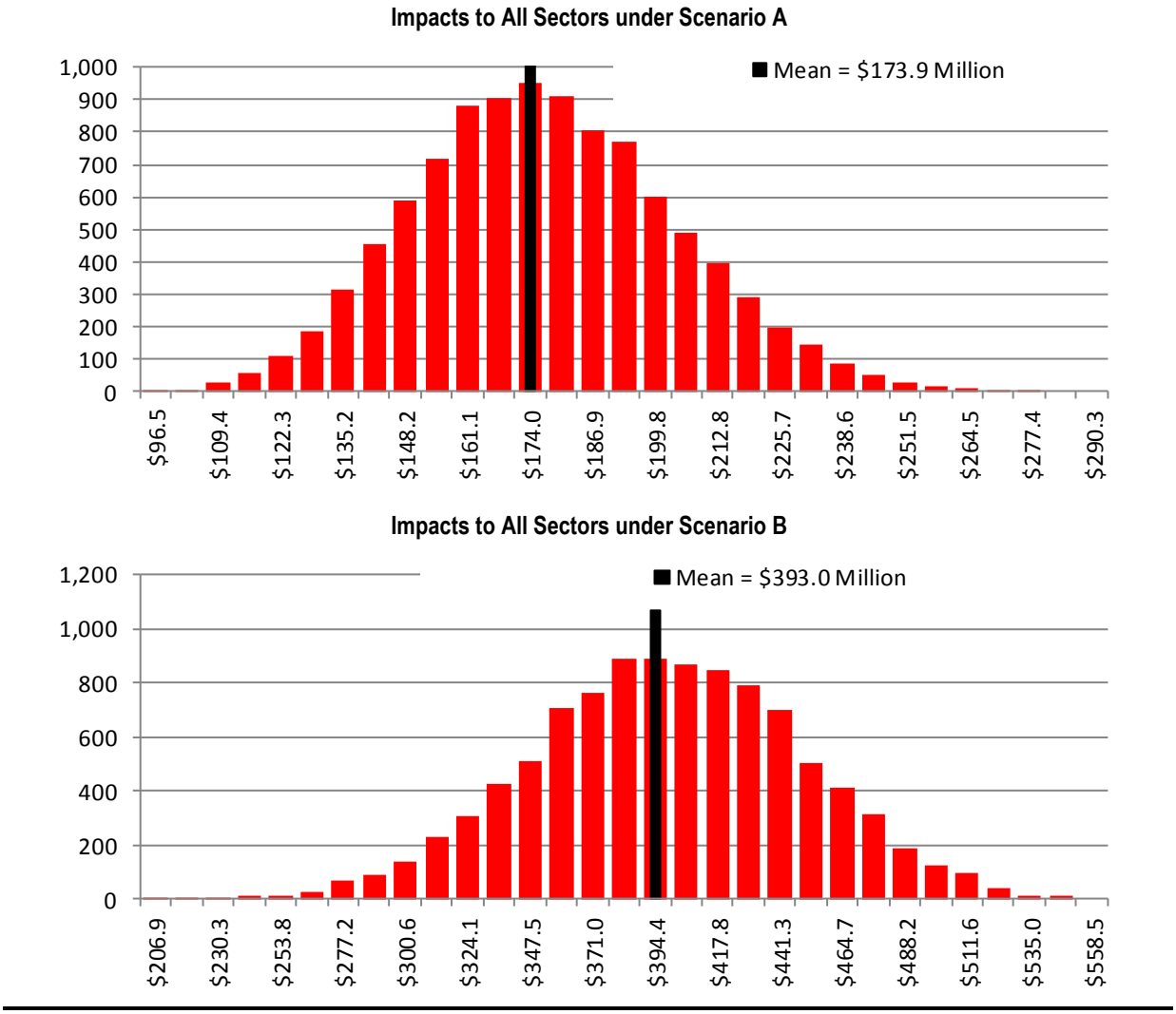


Figure 78 Impacts to to All Groundfish Sectors under the "C" Options: 30 Percent Reduction of PSC Limits



d. All Sectors: Reduce Halibut PSC Limits by 35 Percent

Table 54 Statistical Details of the IMS Model Runs for Option All Sectors: 35 Percent Reduction of PSC Limits

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$0.61	$26.14	-	-	$2.40	$41.62	-	($141.96)	($367.01)
Maximum Change in Magnitude of DPV	$36.13	$6.14	$67.41	$92.79	$23.01	$11.31	$77.54	$103.22	($409.05)	($768.18)
Mean Change in DPV	$22.18	$3.01	$44.41	$69.60	$14.34	$4.77	$59.46	$78.58	($260.46)	($572.32)
Standard Deviation of Changes in DPV	$3.13	$0.88	$5.63	$6.63	$1.99	$1.34	$5.53	$7.32	$36.84	$64.60
Median Change in DPV	$21.86	$2.98	$44.11	$69.59	$14.15	$4.58	$59.39	$78.37	($258.66)	($572.76)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-199.0	-22.6	-404.4	-626.0	-131.0	-40.0	-540.8	-711.8	-626.0	-711.8
Mean Annual Change in Directed Catch (Net Weight MT)	94.1	13.0	188.5	295.7	61.0	20.5	252.5	334.0	-	-
Mean Change in DPV ($2013 million) per annual change in halibut (mt)	$0.24	$0.23	$0.24	$0.24	$0.24	$0.23	$0.24	$0.24	$0.42	$0.80

Table 55 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option All Sectors: 35 Percent Reduction of PSC Limits

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	83.4	241.5	47.4	372.3	95.7	277.0	54.4	427.1
Average Annual Average over Last 5 years (2019–2023)	16.7	48.3	9.5	74.5	19.1	55.4	10.9	85.4
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$1.66	$4.42	$0.94	$7.02	$1.91	$5.07	$1.07	$8.06
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	32.8	95.1	18.7	146.6	37.7	109.2	21.4	168.3
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.62	$1.65	$0.35	$2.62	$0.71	$1.89	$0.40	$3.00

Figure 79 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option All Sectors: 35 Percent Reduction of PSC Limits

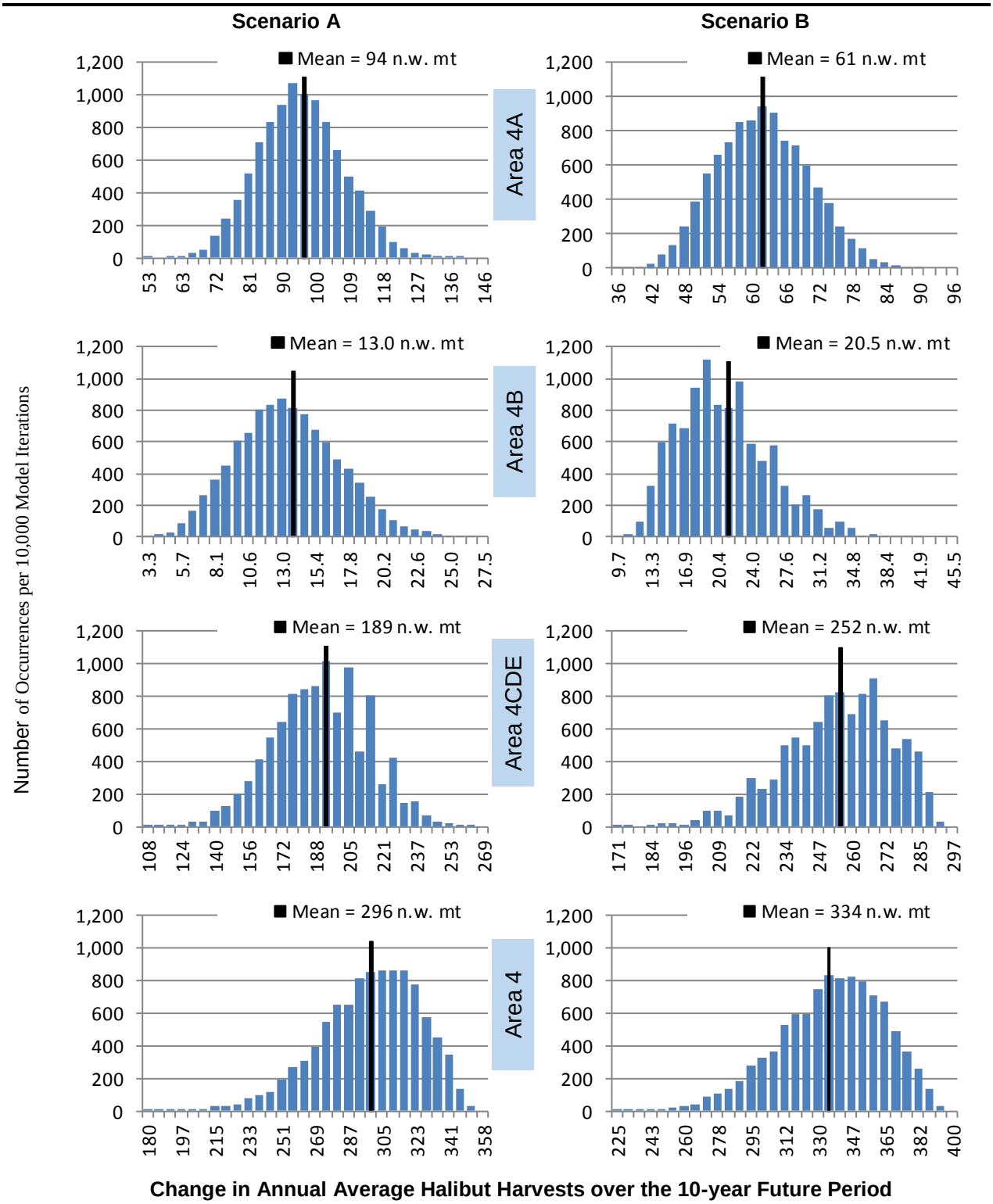


Figure 80 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option All Sectors: 35 Percent Reduction of PSC Limits

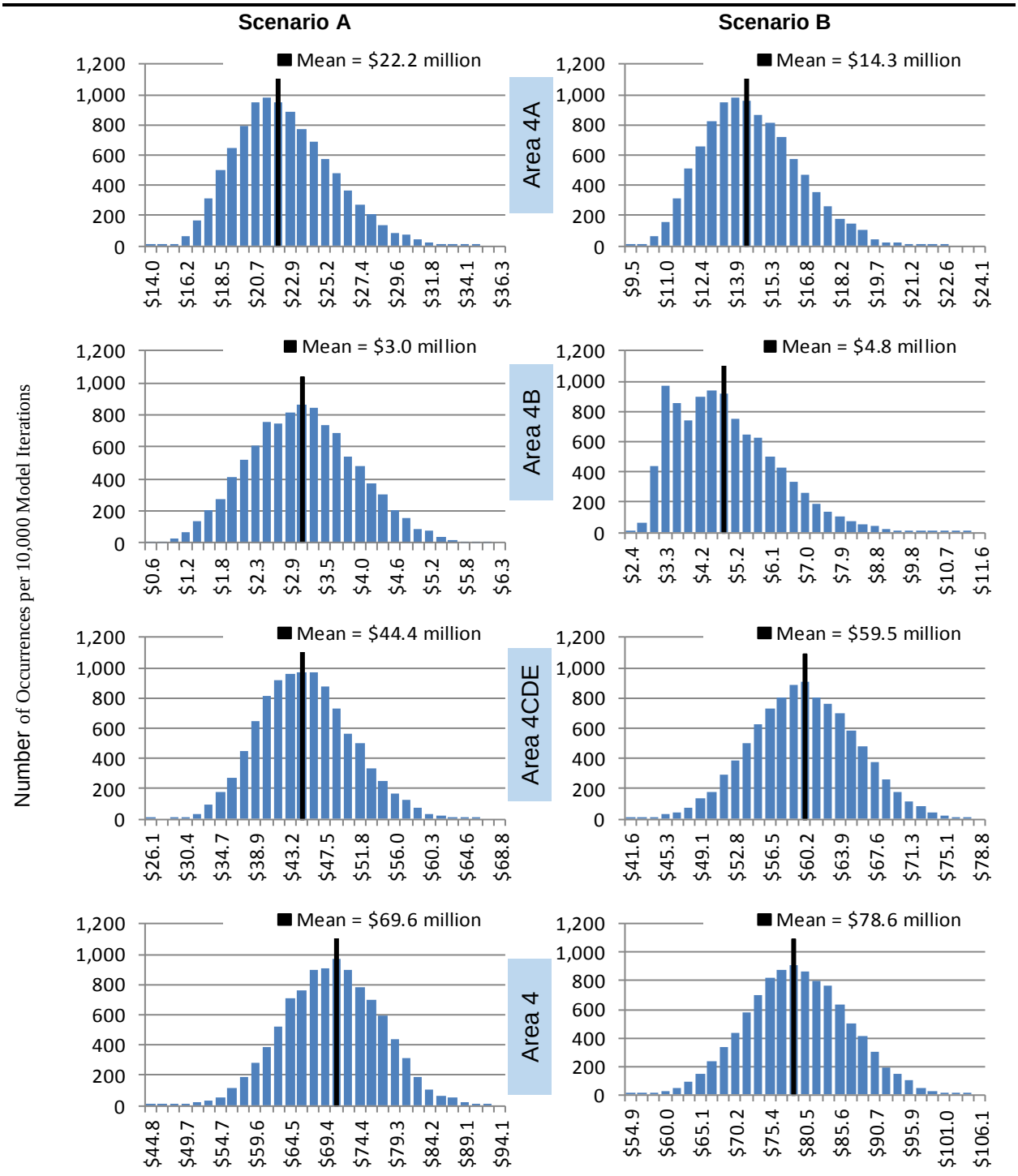
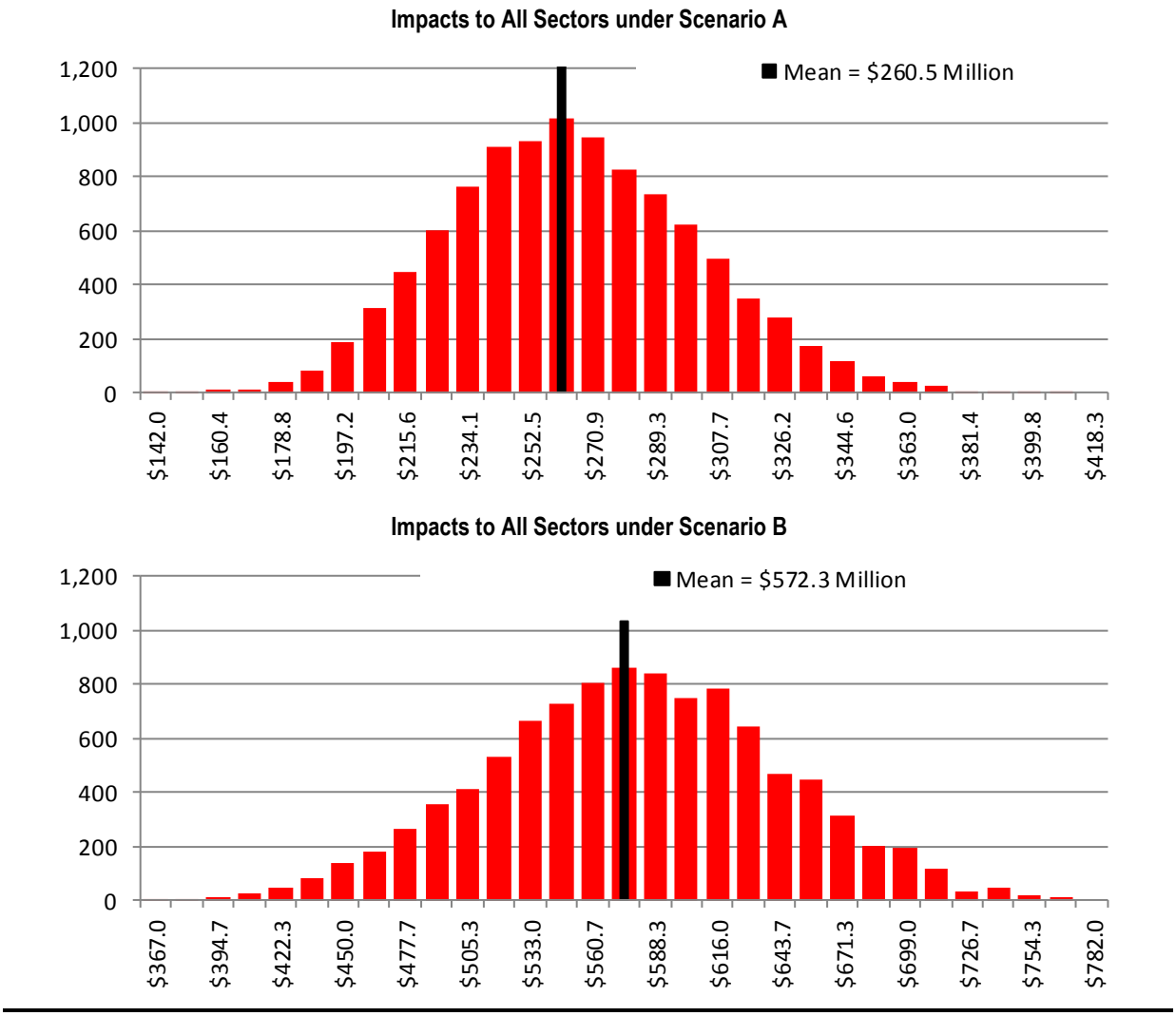


Figure 81 Impacts to All Groundfish Sectors under the "d" Options: 40 Percent Reduction of PSC Limits



e. All Sectors: Reduce Halibut PSC Limits by 40 Percent

Table 56 Statistical Details of the IMS Model Runs for Option All Sectors: 40 Percent Reduction of PSC Limits

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$1.27	$38.27	-	-	$3.16	$54.26	-	($241.05)	($569.42)
Maximum Change in Magnitude of DPV	$45.02	$6.58	$84.17	$114.81	$27.44	$12.69	$95.84	$125.43	($533.33)	($986.40)
Mean Change in DPV	$26.89	$4.03	$57.14	$88.06	$18.34	$5.61	$73.62	$97.56	($370.97)	($772.36)
Standard Deviation of Changes in DPV	$3.81	$0.77	$6.19	$7.72	$2.24	$1.30	$6.47	$8.24	$39.58	$63.03
Median Change in DPV	$26.63	$4.04	$56.80	$87.95	$18.11	$5.43	$73.44	$97.37	($370.25)	($771.64)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-240.9	-30.4	-519.5	-790.7	-166.9	-46.9	-667.5	-881.2	-790.7	-881.2
Mean Annual Change in Directed Catch (Net Weight MT)	114.1	17.4	242.4	373.9	78.0	24.1	312.2	414.3	-	-
Mean Change in DPV (2013$ million) per annual change in halibut (mt)	$0.24	$0.23	$0.24	$0.24	$0.24	$0.23	$0.24	$0.24	$0.47	$0.88

Table 57 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option All Sectors: 40 Percent Reduction of PSC Limits

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	105.0	303.6	59.7	468.3	118.6	342.7	67.4	528.7
Average Annual Average over Last 5 years (2019–2023)	21.0	60.7	11.9	93.7	23.7	68.5	13.5	105.7
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$2.10	$5.55	$1.18	$8.83	$2.37	$6.27	$1.33	$9.97
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	41.4	119.6	23.5	184.5	46.7	135.0	26.5	208.2
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.78	$2.07	$0.44	$3.29	$0.88	$2.33	$0.49	$3.71

Figure 82 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option All Sectors: 40 Percent Reduction of PSC Limits

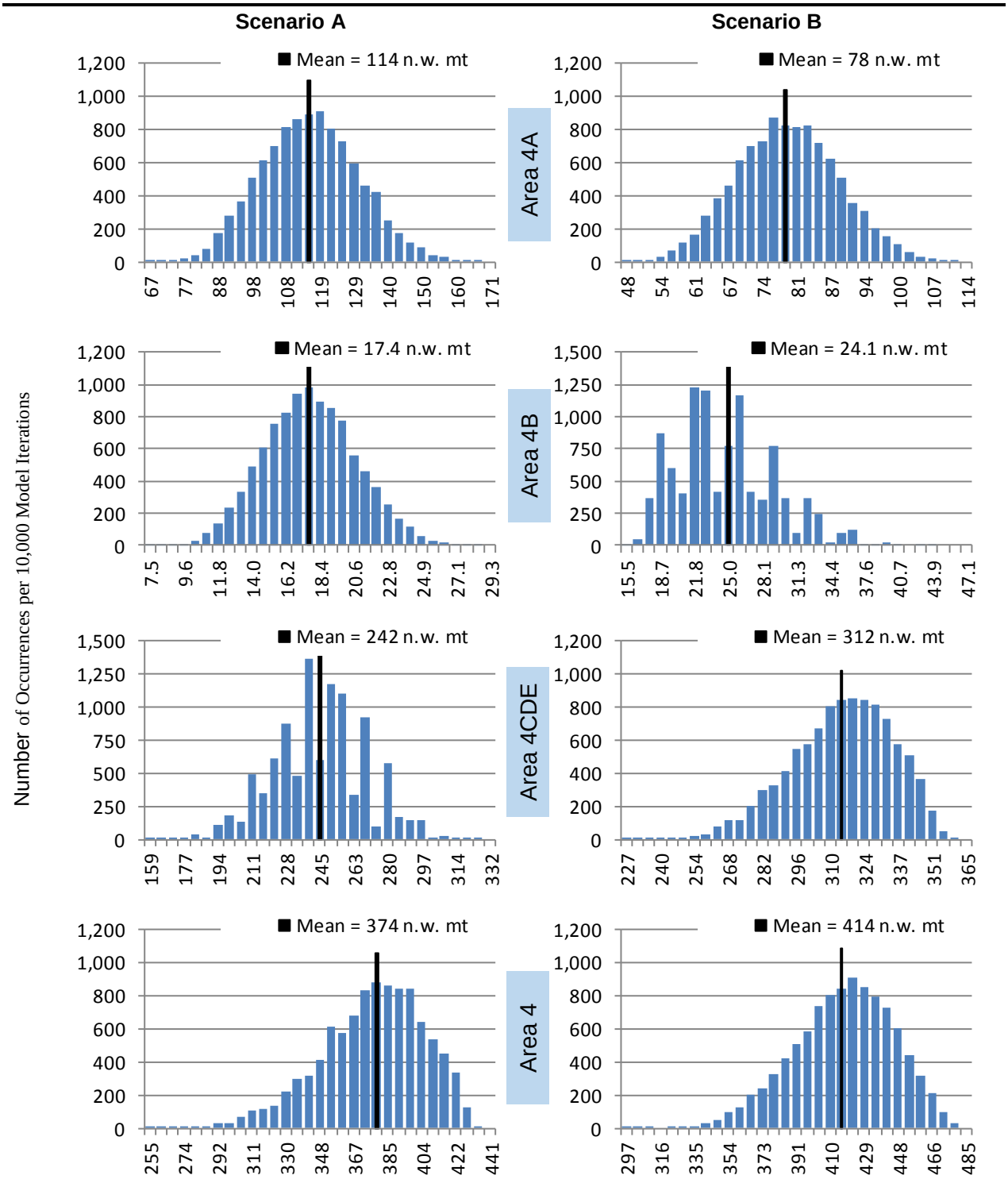


Figure 83 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option All Sectors: 40 Percent Reduction of PSC Limits

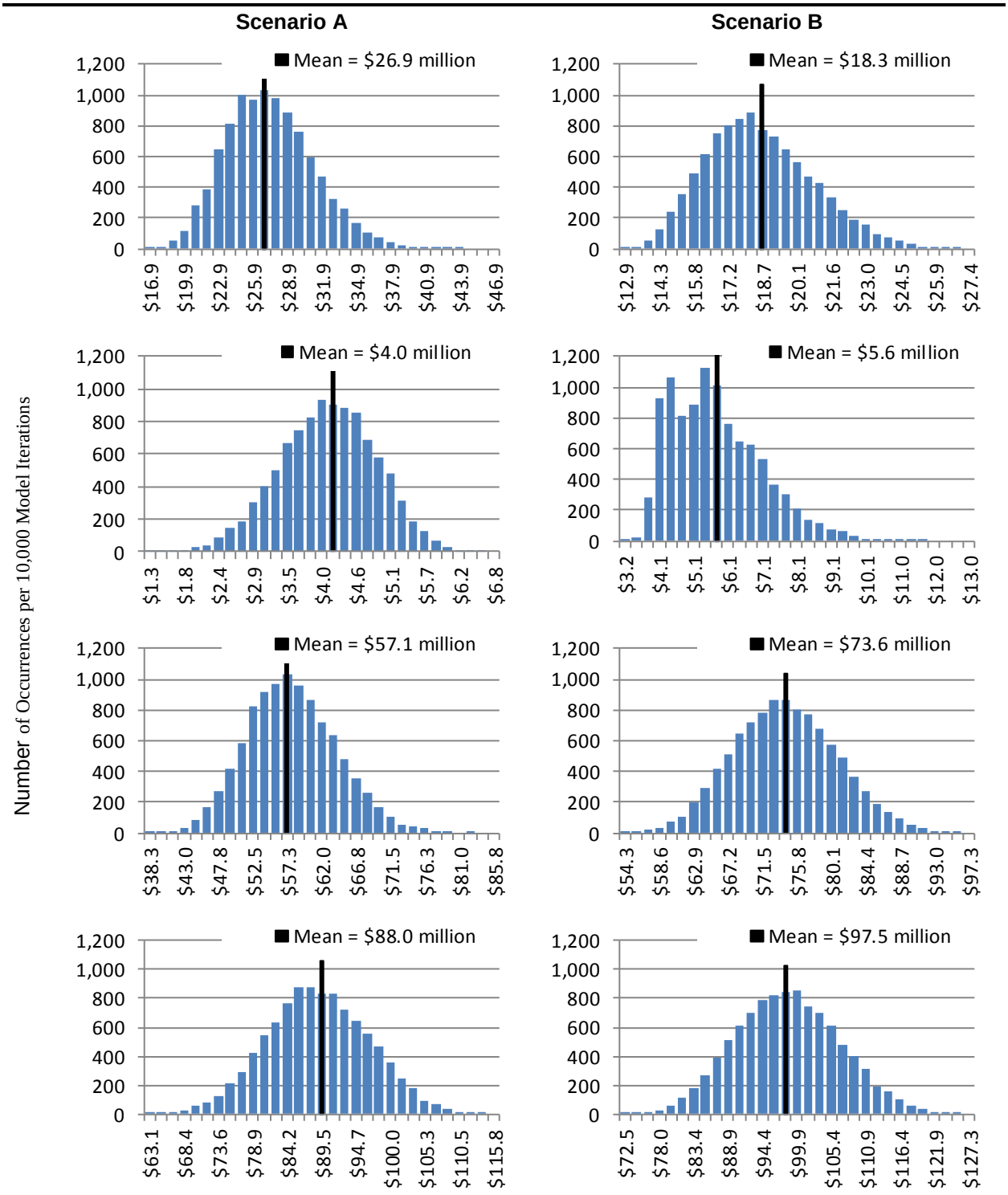
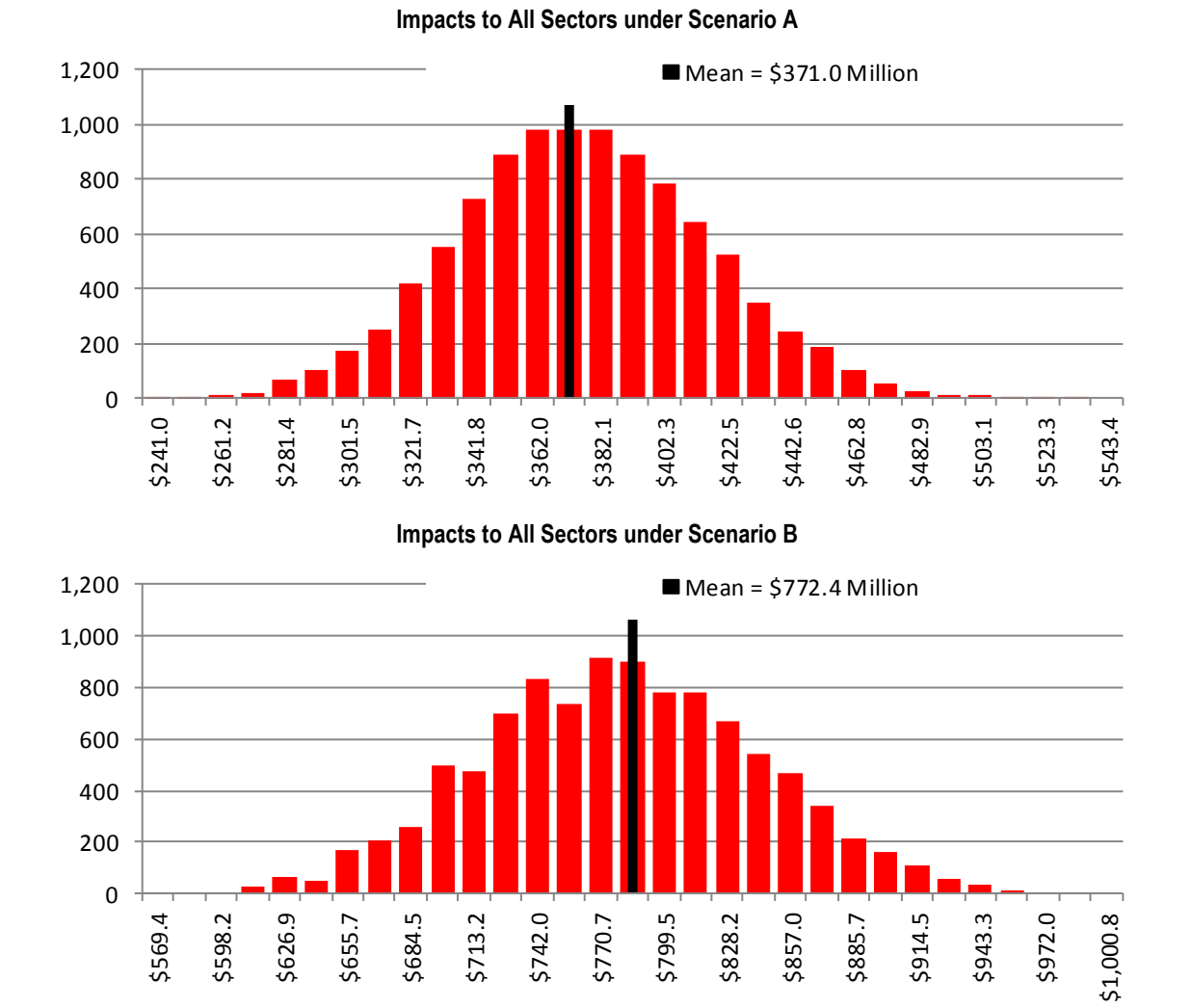


Figure 84 Impacts to All Groundfish Sectors under the "e" Options: 45 Percent Reduction of PSC Limits



f. All Sectors: Reduce Halibut PSC Limits by 45 Percent

Table 58 Statistical Details of the IMS Model Runs for Option All Sectors: 45 Percent Reduction of PSC Limits

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$1.45	$49.14	-	-	$3.39	$68.23	-	($351.50)	($767.86)
Maximum Change in Magnitude of DPV	$51.58	$7.07	$94.59	$138.52	$35.05	$12.31	$113.01	$152.10	($675.94)	($1,262.67)
Mean Change in DPV	$34.53	$4.46	$69.80	$108.79	$23.04	$6.73	$89.33	$119.09	($506.44)	($991.39)
Standard Deviation of Changes in DPV	$4.03	$0.82	$6.63	$9.00	$2.65	$1.35	$6.88	$9.44	$47.15	$69.14
Median Change in DPV	$34.29	$4.47	$69.67	$108.60	$22.76	$6.60	$89.19	$118.87	($505.39)	($990.81)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-310.0	-33.3	-632.0	-975.4	-210.1	-56.0	-810.0	-1,076.1	-975.4	-1,076.1
Mean Annual Change in Directed Catch (Net Weight MT)	146.5	19.3	296.2	462.0	98.1	28.9	378.9	506.0	-	-
Mean Change in DPV (2013 million) per annual change in halibut (mt)	$0.24	$0.23	$0.24	$0.24	$0.23	$0.23	$0.24	$0.24	$0.52	$0.92

Table 59 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option All Sectors: 45 Percent Reduction of PSC Limits

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	129.6	375.1	73.7	578.3	144.5	417.6	82.4	644.5
Average Annual Average over Last 5 years (2019–2023)	25.9	75.0	14.7	115.7	28.9	83.5	16.5	128.9
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$2.58	$6.86	$1.45	$10.90	$2.89	$7.64	$1.62	$12.15
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	51.0	147.7	29.0	227.8	56.9	164.6	32.5	254.0
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$0.96	$2.55	$0.54	$4.06	$1.08	$2.85	$0.60	$4.53

Figure 85 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option All Sectors: 45 Percent Reduction of PSC Limits

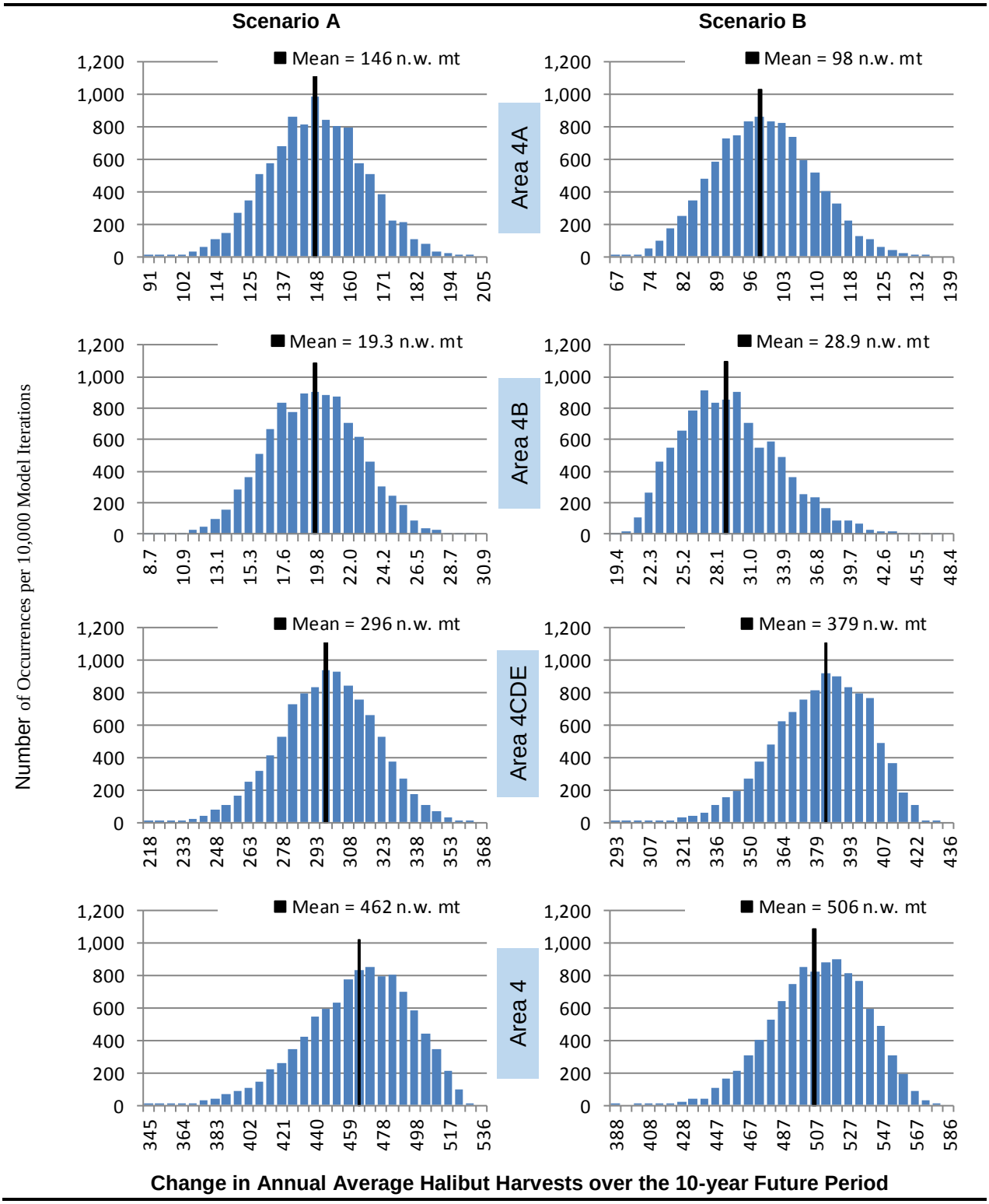


Figure 86 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option All Sectors: 45 Percent Reduction of PSC Limits

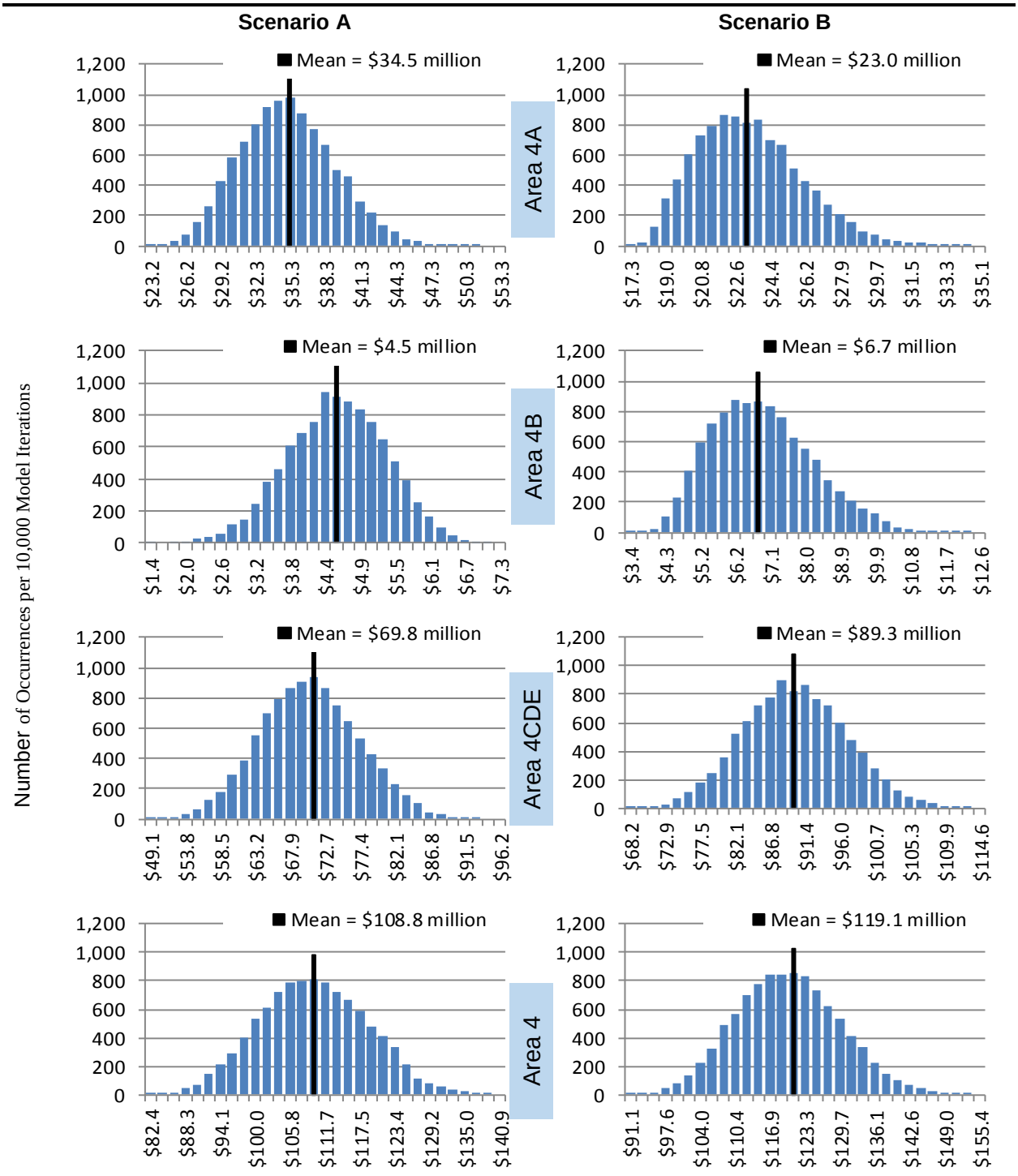
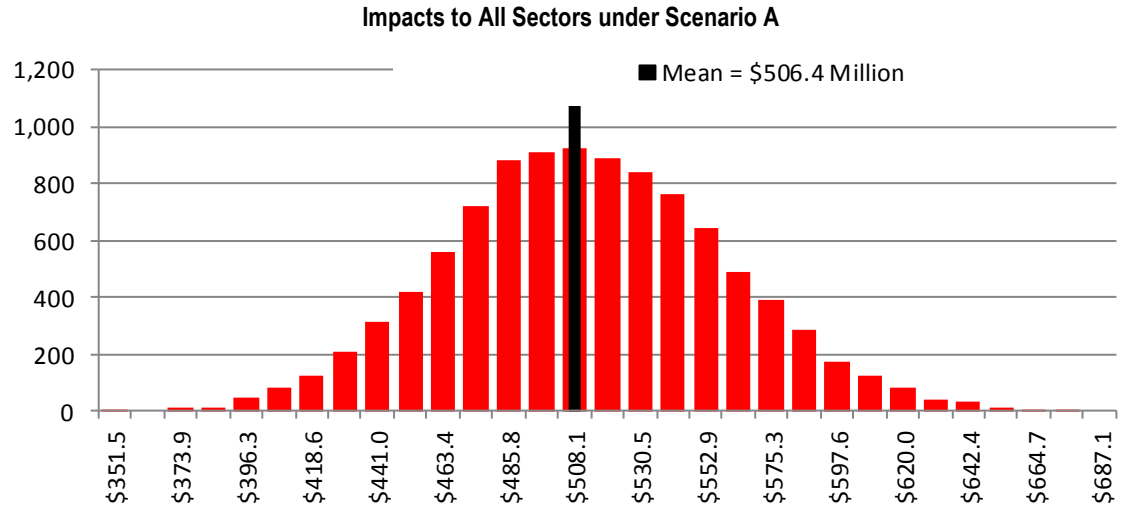
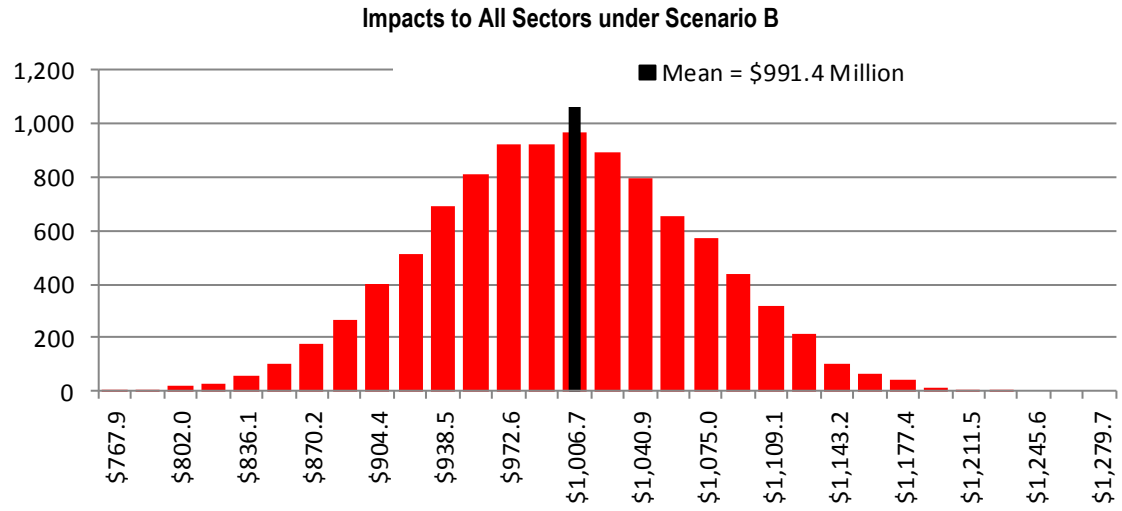


Figure 87 Impacts to All Groundfish Sectors under the "f" Options: 45 Percent Reduction of PSC Limits





g. All Sectors: Reduce Halibut PSC Limits by 50 Percent

Table 60 Statistical Details of the IMS Model Runs for Option All Sectors: 50 Percent Reduction of PSC Limits

	Directed Halibut Fishery Impacts								Groundfish	
	Scenario A				Scenario B				Scenario A	Scenario B
	4A	4B	4CDE	Area 4	4A	4B	4CDE	Area 4	All Areas	
Iterations with No Change in Discounted Present Value (DPV)	-	-	-	-	-	-	-	-	-	-
Net Change in the Discounted Present Value of Wholesale Revenue from the Status Quo Over All Iterations ($2013 Millions)										
Minimum Change in Magnitude of DPV	-	$1.93	$51.74	-	-	$5.20	$79.61	-	($522.53)	($989.53)
Maximum Change in Magnitude of DPV	$62.77	$7.71	$113.35	$165.05	$40.49	$14.90	$131.48	$175.61	($877.48)	($1,541.50)
Mean Change in DPV	$43.09	$5.18	$81.04	$129.31	$27.43	$8.71	$105.57	$141.70	($692.56)	($1,245.27)
Standard Deviation of Changes in DPV	$4.34	$0.87	$8.80	$10.31	$3.08	$1.37	$8.01	$10.78	$53.68	$74.39
Median Change in DPV	$42.93	$5.21	$81.08	$129.15	$27.10	$8.59	$105.62	$141.67	($692.34)	($1,244.31)
Change in Average Annual Halibut (MT) from the Status Quo										
Mean Annual Change in Halibut PSC mortality (Round Weight MT)	-387.3	-38.9	-733.6	-1,159.8	-249.6	-72.4	-955.5	-1,277.5	-1,159.8	-1,277.5
Mean Annual Change in Directed Catch (Net Weight MT)	182.9	22.5	343.9	549.3	116.6	37.4	447.2	601.1	-	-
Mean Change in DPV (2013$ million) per annual change in halibut (mt)	$0.24	$0.23	$0.24	$0.24	$0.24	$0.23	$0.24	$0.24	$0.60	$0.97

Table 61 Summary of Future "U26 Impacts" in Area 4 and in Other Areas Outside of Area 4 under Option All Sectors: 50 Percent Reduction of PSC Limits

	Scenario A				Scenario B			
	Area 4	Other AK	External	All Areas	Area 4	Other AK	External	All Areas
Total Increase in Catch (nw mt) from U26 Saving (2014 – 2023)	153.8	444.4	87.6	685.9	171.5	495.7	97.5	764.6
Average Annual Average over Last 5 years (2019–2023)	30.8	88.9	17.5	137.2	34.3	99.1	19.5	152.9
DPV of Wholesale Revenue (2013 millions) from U26 Savings	$3.07	$8.13	$1.73	$12.93	$3.42	$9.07	$1.92	$14.41
Total Increase in Catch (N.W. mt) from U26 Savings in 2023 only	60.6	175.0	34.5	270.2	67.6	195.4	38.3	301.3
DPV of Wholesale Revenue ($2013 millions) from U26 Savings in 2023 only	$1.14	$3.03	$0.65	$4.82	$1.28	$3.38	$0.72	$5.37

Figure 88 Annual Average Increase in Commercial Halibut Harvest Relative to Status Quo under Option All Sectors: 50 Percent Reduction of PSC Limits

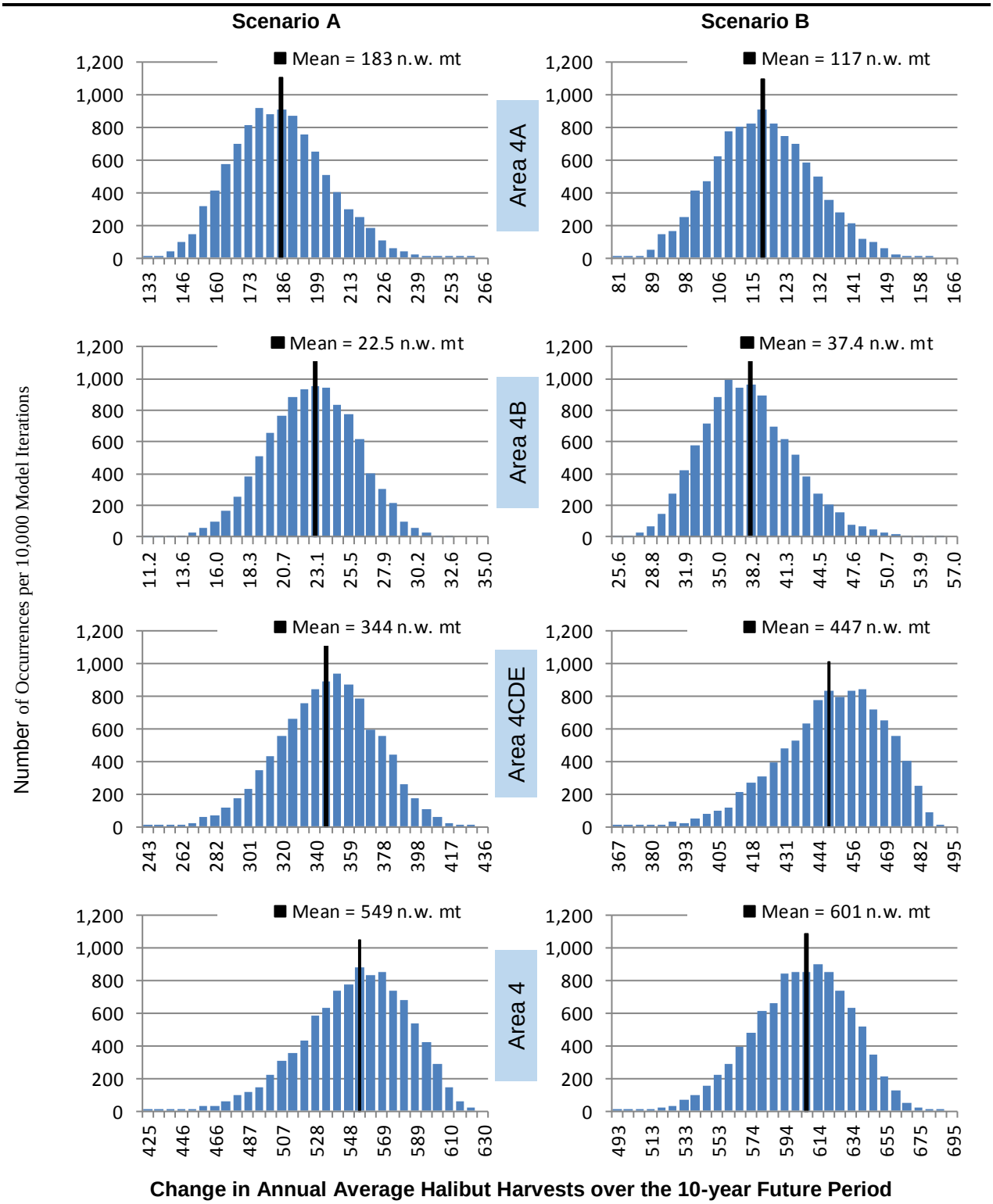


Figure 89 Discounted Present Value of Increases in Wholesale Revenue to Commercial Halibut Fisheries Relative to Status Quo under Option All Sectors: 50 Percent Reduction of PSC Limits

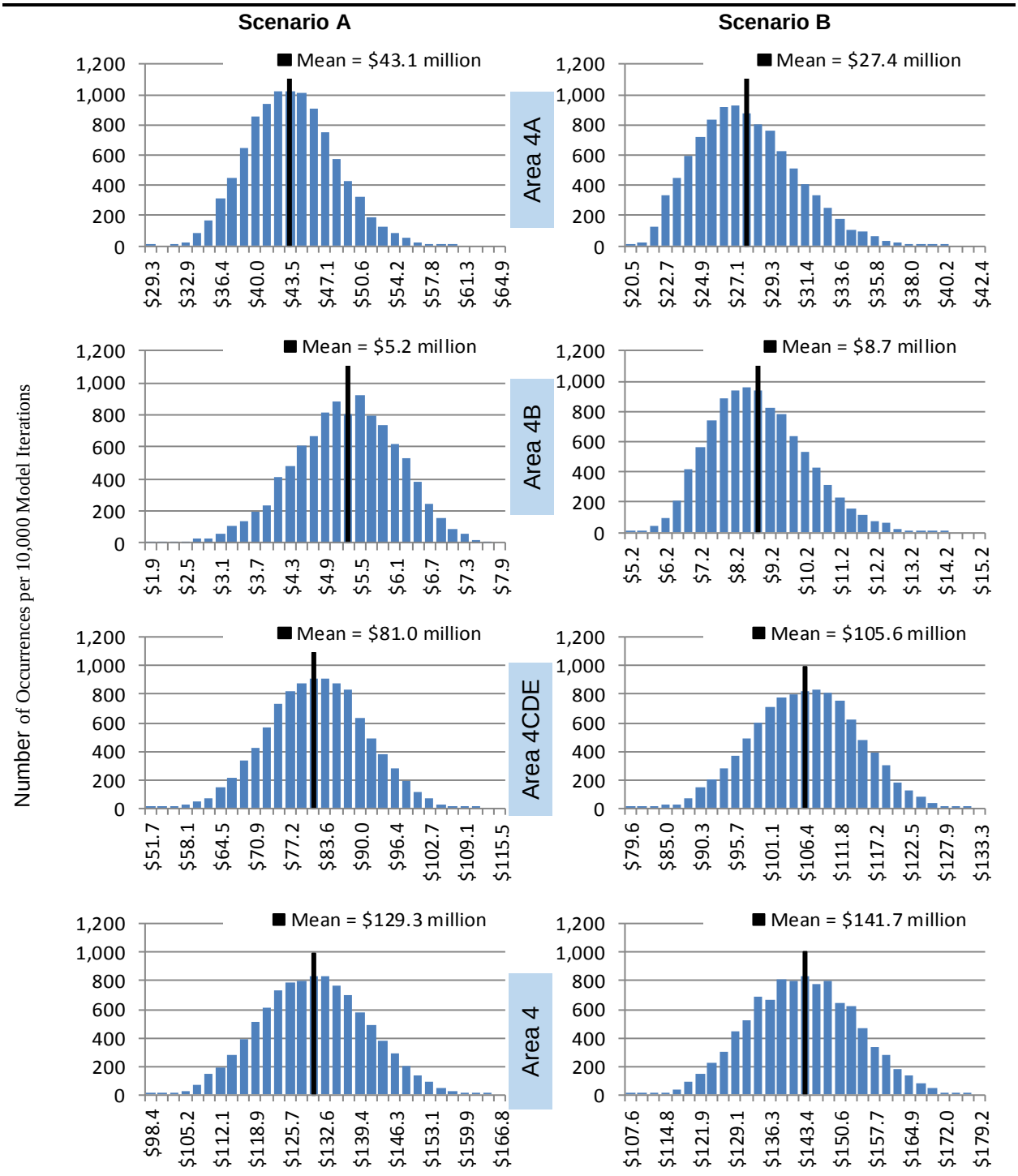


Figure 90 Impacts to All Groundfish Sectors under the "g" Options: 50 Percent Reduction of PSC Limits