



# Oregon

Kate Brown, Governor

Department of Fish and Wildlife  
Office of the Director  
4034 Fairview Industrial Drive SE  
Salem, OR 97302  
(503) 947-6044  
FAX (503) 947-6042  
odfw.com

April 20, 2020

Commissioner Donald McIsaac  
PO Box 43200  
Olympia, WA 98504-3200



Policy Review Committee Chair <sup>Don</sup> McIsaac,

Attached are Oregon Department of Fish and Wildlife's (Oregon) analyses of policy components discussed by the Columbia River Policy Review Committee (PRC). These analyses were requested by the PRC and incorporate policy components discussed by the committee through their November 18, 2019 meeting. As you are aware, Oregon temporarily suspended PRC activities earlier this year, but we felt it was important to complete these requested analyses.

The first two pages provide useful background information, and document some of the key assumptions (Table 1) in the modeling. Outputs for specific options begin on the third page. Option A (Table 2) reflects Washington policy as adopted in March of 2019. Option B (Table 3) reflects current Oregon policy for allocations, but would allow additional mainstem commercial gillnet fishing opportunities. Option C (Table 4) reflects current Oregon policy, for both gears and allocation. Option D (Table 5) is a mix of various policy components for allocations and mainstem commercial gears intended to be responsive to PRC requests to find additional approaches that might be useful to the Committee. Also included is a model output which estimates the effects that might occur if pre-2012 policies for allocations, mainstem commercial gears, and off-channel production were in place (Table 6).

The final two pages include a high-level summary of the suite of outputs from the prior pages (Table 7), and a brief discussion of the economic contributions of increased Oregon production in off-channel areas associated with the policy and Oregon funding sources.

Please contact Tucker Jones at 971-673-6067 or Chris Kern at 503-947-6209 if you have any questions, and they will follow up with the appropriate technical staff.

Sincerely,

Curtis E. Melcher  
Director

Attachments

c: Mary Wahl, Chair, Oregon Fish and Wildlife Commission  
Ed Bowles, ODFW Fish Division Administrator  
Chris Kern, ODFW Fish Division Deputy Administrator  
Kelly Susewind, Director, Washington Department of Fish and Wildlife  
Bill Tweit, WDFW Special Assistant – Fish Program

Table 1. Summary of assumptions incorporated into modeling of PRC policy options.

Policy Option	Description	Allocation Sharing (%)			Mainstem Commercial Gears								Select Area Releases <sup>4</sup>		
		Sport/Commercial			Spring		Summer			Fall			(millions of smolts)		
		Spring	Summer	Fall (LRH/URB) <sup>1</sup>	Pre-Update Tangle Net <sup>2</sup>	Post-Update Tangle Net/Gillnet	Gillnet	Alternative Gear <sup>7</sup>	Large Mesh Gillnet <sup>3</sup>	Seine MSF	Coho 6" Gillnet	Coho Tangle Net MSF	Spring Chinook	SAB Fall Chinook	Coho
A	2019 Washington Policy (with OR Policy SAFE production expectations)	70/30	70/30 <sup>5</sup>	≤70/≥30	Y	Y	Y	Y	Y	Y	Y	Y	3.149	~0.45	4.83
B	Oregon allocations and SAFE production expectations (with revised allowable gear per PRC)	80/20	80/20	≤70/≥30	N <sup>6</sup>	Y	Y	Y	Y	Y	Y	Y	3.149	~0.45	4.83
C	Current Oregon Policy	80/20	80/20	≤70/≥30	N	Y	N	Y <sup>7</sup>	Y	Y	N	Y	3.149	~0.45	4.83
D	Spring WA Policy, Summer OR allocation with PRC gears, Fall Alt 2 (with OR Policy SAFE production expectations)	70/30	80/20	≤65/≥35	Y	Y	Y	Y	Y	Y	Y	Y	3.149	~0.45	4.83
--	Pre-Policy (2010-2012 base for reference)	60/40	50/50	59/41	Y	Y	Y	--	Y	--	Y	--	1.55	~0.45	4.17

<sup>1</sup> Although all policy options allow for fall allocation shares ≤ to the sport allocation and ≥ to the commercial allocation, modeling of the options used fixed allocation percentages shown.

<sup>2</sup> A pre-run update mainstem tangle net fishery assumes application of a commercial run size buffer.

<sup>3</sup> Policy options A, B, and D would allow fall non-treaty mainstem gillnet fishing in commercial Zones 1-5, while Option C restricts the fishing area to Zones 4-5 (upstream of the Lewis River). However, modeling for all options (A-D) assumes the vast majority of fishing and harvest would occur in Zones 4-5, similar to what occurred in 2013-2019. Since 2007, the non-treaty Chinook-directed commercial fishery has progressively focused more on Zones 4-5 during the fall season due to reductions in the overall allowed exploitation rate on lower Columbia River fall Chinook. If the amount of fishing in Zones 1-5 deviated from what has occurred recently, e.g. in early August, modeled values could differ from those presented here.

<sup>4</sup> Select Area releases shown for policy options represent expected near term average production levels, and are less than current Oregon Policy goals (3.7 million spring Chinook, 1.0 million SAB fall Chinook, 5.255 million Coho). These average release expectations were estimated based on actual releases relative to release targets since 2013 for spring Chinook and Coho, and recent poor returns/releases of SAB fall Chinook. Pre-policy Select Area releases for spring Chinook and Coho reflect release goals in effect during 2010-2012. For SAB fall Chinook, the average near term release expectation of ~0.45M is used rather than the release target in 2010-2012 (1.45M) to allow for an equitable comparison among policy options.

<sup>5</sup> Five percent of the commercial share in the summer season is set aside for incidental harvest of upper Columbia summer Chinook in Select Area fisheries. The remaining 25% is available for implementation of mainstem commercial fisheries targeting upriver summer Chinook.

<sup>6</sup> Although the February 26, 2019 PRC recommendation for this option was to allow a pre-update mainstem tangle net fishery, when a run size buffer is applied to the commercial allocation of 20% (see footnote 2), insufficient ESA impacts are available for both a full Select Area spring Chinook season and a pre-update mainstem tangle net fishery. Therefore, to maintain the potential for a full Select Area season, a pre-update tangle net fishery is not feasible under this option.

<sup>7</sup> Alternative gears are required for mainstem commercial summer Chinook fisheries. Since no alternative gear has been identified as available and viable for this fishery, the model assumes \$0 value for the fishery. The model also assumes that any unused commercial balance is not available to the recreational fishery downstream of Bonneville Dam.

### **Summary of Modeling Approach for Comparison of Policy Options**

-Modeling was based on observed results from 2013-2018 (run sizes, angler trips, ex-vessel value, etc.), the model estimates fishery outcomes in out-years (2020-2025) presuming 2013-2018 conditions would carry forward and changing inputs with respect to ESA impact allocations, mainstem commercial gear types, and Select Area production levels.

-Out-year projections for angler trips and commercial ex-vessel value are compared to expected values for these metrics in the absence of the Harvest Reform Policy.

-The "without policy" baselines for angler trips and ex-vessel value represent an average annual expectation for out-years, based on 2013-2018 observed results adjusted to what they would have been with baseline pre-Reform (2010-2012 average) allocations and Select Area releases.

-Out-year modeling results are not intended to be predictive, but instead provide a relative comparison to the expected baseline for different policy options.

**Table 2.**

Option A	Model Inputs	Fishery	Metric	2020	2021	2022	2023	2024	2025	SAFE CHS @ 3.515M <sup>5</sup>		
<b>2019 Washington Policy (with Oregon Policy SAFE hatchery production expectations)</b>	Spring allocation 70% sport/30% commercial (pre-run update commercial buffer), with pre-update mainstem tangle net and post-update tangle net/gillnet allowed; Summer allocation 70% sport/30% commercial (5% reserved for incidental harvest of summer Chinook in SAFE) with mainstem gillnets and alternative gears allowed; Fall LRH tangle/URB allocation ≤70% sport/≥30% commercial with gillnets allowed in Zones 1-5; mark-selective beach and purse seine fishery at average value and frequency of occurrence during 2014-2018; Coho 6" gillnet fishery and mark-selective Coho tangle net fishery at average value and frequency of occurrence during 2013-2018; SAFE releases <sup>4</sup> : CHS 3.149M (2024-25 return), SAB ~0.45M (2020-25 return), Coho 4.83M (2022-25 return)	Sport	Total Angler Trips <sup>1</sup>	349,780	349,780	349,780	349,780	349,780	349,780	349,780		
			Without Policy Angler Trips <sup>2</sup>	339,846	339,846	339,846	339,846	339,846	339,846	339,846	339,846	
			Angler Trip Δ	9,934	9,934	9,934	9,934	9,934	9,934	9,934		
			Angler Trip Δ %	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%	2.9%		
			Local Personal Income Impact <sup>3</sup>	\$27,451,212	\$27,451,212	\$27,451,212	\$27,451,212	\$27,451,212	\$27,451,212	\$27,451,212		
		Commercial	Total Ex-Vessel Value	\$4,126,178	\$4,241,845	\$4,488,948	\$4,533,055	\$4,570,688	\$4,593,080	\$4,766,295		
			Without Policy Ex-Vessel Value <sup>2</sup>	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500		
			Ex-Vessel Value Δ	(\$620,322)	(\$504,655)	(\$257,552)	(\$213,445)	(\$175,812)	(\$153,420)	\$19,795		
			Ex-Vessel Value Δ %	-13.1%	-10.6%	-5.4%	-4.5%	-3.7%	-3.2%	0.4%		
			Local Personal Income Impact	\$6,915,808	\$7,109,676	\$7,523,841	\$7,597,768	\$7,660,843	\$7,698,374	\$7,988,696		
			Local Personal Income Impact	\$34,367,020	\$34,560,888	\$34,975,053	\$35,048,980	\$35,112,055	\$35,149,586	\$35,439,908		
	Contribution to Total Commercial Ex-Vessel Value by Fishery		Mainstem Gillnet <sup>6</sup>	Spring Chinook (Tangle net & Gillnet)	\$313,257	\$313,257	\$313,257	\$313,257	\$313,257	\$313,257	\$313,257	
	Summer Chinook	\$126,520		\$126,520	\$126,520	\$126,520	\$126,520	\$126,520	\$126,520			
	Fall Chinook	\$1,588,696		\$1,588,696	\$1,588,696	\$1,588,696	\$1,588,696	\$1,588,696	\$1,588,696			
	Coho	\$96,427		\$96,427	\$96,427	\$96,427	\$96,427	\$96,427	\$96,427			
	Select Area Gillnet	Spring Chinook		\$1,139,759	\$1,234,242	\$1,484,315	\$1,521,089	\$1,533,958	\$1,546,174	\$1,719,389		
		Fall Chinook		\$182,549	\$182,116	\$174,022	\$181,356	\$206,120	\$216,296	\$216,296		
		Coho		\$598,242	\$619,859	\$624,983	\$624,983	\$624,983	\$624,983	\$624,983		
	Mainstem Seine	Beach Chinook/Coho		\$8,534	\$8,534	\$8,534	\$8,534	\$8,534	\$8,534	\$8,534		
		Purse Chinook/Coho		\$22,453	\$22,453	\$22,453	\$22,453	\$22,453	\$22,453	\$22,453		
	Mainstem Tangle Net	Coho		\$49,740	\$49,740	\$49,740	\$49,740	\$49,740	\$49,740	\$49,740		
	Total Commercial				\$4,126,178	\$4,241,845	\$4,488,948	\$4,533,055	\$4,570,688	\$4,593,080	\$4,766,295	
	Contribution to Total Sport Angler Trips by Fishery			Spring	Spring Chinook	115,469	115,469	115,469	115,469	115,469	115,469	115,469
			Summer		Summer Chinook	22,350	22,350	22,350	22,350	22,350	22,350	22,350
					Fall-Buoy 10	Fall Chinook/Coho	90,002	90,002	90,002	90,002	90,002	90,002
			Fall-Mainstem			Fall Chinook/Coho	121,959	121,959	121,959	121,959	121,959	121,959
		Total Sport				349,780	349,780	349,780	349,780	349,780	349,780	349,780

<sup>1</sup> Angler trip estimates apply to recreational fisheries downstream of Bonneville Dam. Angler effort data from creel surveys for all fisheries and areas upstream of Bonneville Dam affected by the policy are not available, particularly during 2013-2016 (4/6 years on which the model is based)

<sup>2</sup> "Without Policy" angler trips and ex-vessel value represent the average number of trips and average ex-vessel value expected for 2013-2018 had the Harvest Reform Policy not been implemented (with adjusted SAB fall Chinook releases). These averages are used as the baseline values for 2020.

<sup>3</sup> Local Personal Income Impact is a measure of the impact to local economies in the Oregon/Washington region associated with angler trips in the lower Columbia River sport fishery (e.g. gas, food, lodging, guide fees, etc.), and the impact to local economies of lower Columbia River commercially landed salmon (e.g. value to processors, wholesalers, etc.). Sport and commercial value multipliers from the 2016 Input-Output Pacific Fisheries (I-O PAC) model were applied to total angler trips and ex-vessel value for the respective fisheries. Different multipliers were applied to estimated guided and non-guided angler trips in the sport fishery.

<sup>4</sup> Select Area production shown in the model inputs section represent expected near term average production levels, and are less than current Oregon Policy goals (3.7 million spring Chinook, 1.0 million SAB fall Chinook, 5.255 million Coho). These average production expectations were estimated based on actual production relative to production targets since 2013 for spring Chinook and Coho, and recent poor returns/production of SAB fall Chinook.

<sup>5</sup> The values in the "SAFE CHS @ 3.515M" column represent the policy option shown, except the Select Area ex-vessel value of spring Chinook is increased assuming full production releases (95% of 3.7M) can be achieved

<sup>6</sup> Policy options A, B, and D would allow fall non-treaty mainstem gillnet fishing in commercial Zones 1-5, while Option C restricts the fishing area to Zones 4-5 (upstream of the Lewis River). However, modeling for all options (A-D) assumes the vast majority of fishing and harvest would occur in Zones 4-5, similar to what occurred in 2013-2019. Since 2007, the non-treaty Chinook-directed commercial fishery has progressively focused more on Zones 4-5 during the fall season due to reductions in the overall allowed exploitation rate on lower Columbia River fall Chinook. If the amount of fishing in Zones 1-5 deviated from what has occurred recently, e.g. in early August, modeled values could differ from those presented here.

**Table 3.**

Option B	Model Inputs	Fishery	Metric	2020	2021	2022	2023	2024	2025	SAFE CHS @ 3.515M <sup>5</sup>		
<b>Oregon Allocations (with revised allowable gear per PRC)</b>	Spring allocation 80% sport/20% commercial (no pre-run update commercial buffer), with mainstem post-update tangle net/gillnet fishery allowed if not all ESA impacts expected to be used in SAFE; Summer allocation 80% sport/20% commercial with mainstem gillnets and alternative gears allowed; Fall LRH tule/URB allocations 70% sport/≥30% commercial with gillnets allowed in Zones 1-5; mark-selective beach and purse seine fishery at average value and frequency of occurrence during 2014-2018; Coho 6" gillnet fishery and mark-selective Coho tangle net fishery at average value and frequency of occurrence during 2013-2018; SAFE releases <sup>4</sup> : CHS 3.149M (2024-25 return), SAB -0.45M (2020-25 return), Coho 4.83M (2022-25 return)	Sport	Total Angler Trips <sup>1</sup>	352,577	352,577	352,577	352,577	352,577	352,577	352,577		
			Without Policy Angler Trips <sup>2</sup>	339,846	339,846	339,846	339,846	339,846	339,846	339,846		
			Angler Trip Δ	12,731	12,731	12,731	12,731	12,731	12,731			
			Angler Trip Δ %	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%			
			Local Personal Income Impact <sup>3</sup>	\$27,661,696	\$27,661,696	\$27,661,696	\$27,661,696	\$27,661,696	\$27,661,696			
		Commercial	Total Ex-Vessel Value	\$3,883,331	\$3,998,998	\$4,246,101	\$4,290,209	\$4,327,841	\$4,350,233	\$4,523,448		
			Without Policy Ex-Vessel Value <sup>2</sup>	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500		
			Ex-Vessel Value Δ	(\$863,169)	(\$747,502)	(\$500,399)	(\$456,291)	(\$418,659)	(\$396,267)	(\$223,052)		
			Ex-Vessel Value Δ %	-18.2%	-15.7%	-10.5%	-9.6%	-8.8%	-8.3%	-4.7%		
			Local Personal Income Impact	\$6,508,777	\$6,702,645	\$7,116,810	\$7,190,737	\$7,253,812	\$7,291,343	\$7,581,666		
		Combined	Local Personal Income Impact	\$34,170,473	\$34,364,341	\$34,778,506	\$34,852,433	\$34,915,508	\$34,953,039	\$35,243,362		
			Contribution to Total Commercial Ex-Vessel Value by Fishery									
				Mainstem Gillnet <sup>6</sup>	Spring Chinook (Tangle net & Gilln	\$95,714	\$95,714	\$95,714	\$95,714	\$95,714	\$95,714	\$95,714
					Summer Chinook	\$101,216	\$101,216	\$101,216	\$101,216	\$101,216	\$101,216	\$101,216
					Fall Chinook	\$1,588,696	\$1,588,696	\$1,588,696	\$1,588,696	\$1,588,696	\$1,588,696	\$1,588,696
Coho	\$96,427				\$96,427	\$96,427	\$96,427	\$96,427	\$96,427	\$96,427		
Select Area Gillnet	Spring Chinook			\$1,139,759	\$1,234,242	\$1,484,315	\$1,521,089	\$1,533,958	\$1,546,174	\$1,719,389		
	Fall Chinook			\$182,549	\$182,116	\$174,022	\$181,356	\$206,120	\$216,296	\$216,296		
	Coho			\$598,242	\$619,859	\$624,983	\$624,983	\$624,983	\$624,983	\$624,983		
Mainstem Seine	Beach Chinook/Coho			\$8,534	\$8,534	\$8,534	\$8,534	\$8,534	\$8,534	\$8,534		
	Purse Chinook/Coho			\$22,453	\$22,453	\$22,453	\$22,453	\$22,453	\$22,453	\$22,453		
Mainstem Tangle Net	Coho			\$49,740	\$49,740	\$49,740	\$49,740	\$49,740	\$49,740	\$49,740		
Total Commercial					\$3,883,331	\$3,998,998	\$4,246,101	\$4,290,209	\$4,327,841	\$4,350,233	\$4,523,448	
Contribution to Total Sport Angler Trips by Fishery												
				Spring	Spring Chinook	115,469	115,469	115,469	115,469	115,469	115,469	115,469
					Summer	25,147	25,147	25,147	25,147	25,147	25,147	25,147
				Fall-Buoy 10	Fall Chinook/Coho	90,002	90,002	90,002	90,002	90,002	90,002	90,002
		Fall-Mainstem	Fall Chinook/Coho	121,959	121,959	121,959	121,959	121,959	121,959	121,959		
		Total Sport		352,577	352,577	352,577	352,577	352,577	352,577	352,577		

<sup>1</sup> Angler trip estimates apply to recreational fisheries downstream of Bonneville Dam. Angler effort data from creel surveys for all fisheries and areas upstream of Bonneville Dam affected by the policy are not available, particularly during 2013-2016 (4/6 years on which the model is based)

<sup>2</sup> "Without Policy" angler trips and ex-vessel value represent the average number of trips and average ex-vessel value expected for 2013-2018 had the Harvest Reform Policy not been implemented (with adjusted SAB fall Chinook releases). These averages are used as the baseline values for 2020.

<sup>3</sup> Local Personal Income Impact is a measure of the impact to local economies in the Oregon/Washington region associated with angler trips in the lower Columbia River sport fishery (e.g. gas, food, lodging, guide fees, etc.), and the impact to local economies of lower Columbia River commercially landed salmon (e.g. value to processors, wholesalers, etc.). Sport and commercial value multipliers from the 2016 Input-Output Pacific Fisheries (I-O PAC) model were applied to total angler trips and ex-vessel value for the respective fisheries. Different multipliers were applied to estimated guided and non-guided angler trips in the sport fishery.

<sup>4</sup> Select Area production shown in the model inputs section represent expected near term average production levels, and are less than current Oregon Policy goals (3.7 million spring Chinook, 1.0 million SAB fall Chinook, 5.255 million Coho). These average production expectations were estimated based on actual production relative to production targets since 2013 for spring Chinook and Coho, and recent poor returns/production of SAB fall Chinook.

<sup>5</sup> The values in the "SAFE CHS @ 3.515M" column represent the policy option shown, except the Select Area ex-vessel value of spring Chinook is increased assuming full production releases (95% of 3.7M) can be achieved

<sup>6</sup> Policy options A, B, and D would allow fall non-treaty mainstem gillnet fishing in commercial Zones 1-5, while Option C restricts the fishing area to Zones 4-5 (upstream of the Lewis River). However, modeling for all options (A-D) assumes the vast majority of fishing and harvest would occur in Zones 4-5, similar to what occurred in 2013-2019. Since 2007, the non-treaty Chinook-directed commercial fishery has progressively focused more on Zones 4-5 during the fall season due to reductions in the overall allowed exploitation rate on lower Columbia River fall Chinook. If the amount of fishing in Zones 1-5 deviated from what has occurred recently, e.g. in early August, modeled values could differ from those presented here.

**Table 4.**

Option C	Model Inputs	Fishery	Metric	2020	2021	2022	2023	2024	2025	SAFE CHS @ 3.515M <sup>5</sup>	
<b>Current Oregon Policy</b>	Spring allocation 80% sport/20% commercial (no pre-run update commercial buffer), with mainstem post-update tangle net fishery allowed if not all ESA impacts expected to be used in SAFE; Summer allocation 80% sport/20% commercial with alternative gear (assumes 0 value if alternative gear not available or viable); Fall LRH tule/URB allocation ≤70% sport/≥30% commercial with gillnets allowed in Zones 4-5; mark-selective beach and purse seine fishery at average value and frequency of occurrence during 2014-2018 (limited to ≤2% of commercial impacts used for most constraining stock); No Coho 6" gillnet fishery; mark-selective Coho tangle net fishery at average value and frequency of occurrence during 2013-2018; SAFE releases <sup>4</sup> : CHS 3.149M (2024-25 return), SAB ~0.45M (2020-25 return), Coho 4.83M (2022-25 return)	Sport	Total Angler Trips <sup>1</sup>	352,577	352,577	352,577	352,577	352,577	352,577	352,577	
			Without Policy Angler Trips <sup>2</sup>	339,846	339,846	339,846	339,846	339,846	339,846	339,846	339,846
			Angler Trip Δ	12,731	12,731	12,731	12,731	12,731	12,731	12,731	
			Angler Trip Δ %	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	
		Local Personal Income Impact <sup>3</sup>	\$27,661,696	\$27,661,696	\$27,661,696	\$27,661,696	\$27,661,696	\$27,661,696	\$27,661,696	\$27,661,696	
		Commercial	Total Ex-Vessel Value	\$3,698,031	\$3,813,698	\$4,060,801	\$4,104,908	\$4,142,541	\$4,164,933	\$4,338,148	
			Without Policy Ex-Vessel Value <sup>2</sup>	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	
			Ex-Vessel Value Δ	(\$1,048,469)	(\$932,802)	(\$685,699)	(\$641,592)	(\$603,959)	(\$581,567)	(\$408,352)	
			Ex-Vessel Value Δ %	-22.1%	-19.7%	-14.4%	-13.5%	-12.7%	-12.3%	-8.6%	
			Local Personal Income Impact	\$6,198,199	\$6,392,067	\$6,806,231	\$6,880,159	\$6,943,234	\$6,980,765	\$7,271,087	
		Combined	Local Personal Income Impact	\$33,859,895	\$34,053,763	\$34,467,927	\$34,541,855	\$34,604,930	\$34,642,461	\$34,932,783	
		Contribution to Total Commercial Ex-Vessel Value by Fishery	Mainstem Gillnet <sup>6</sup>	Spring Chinook (Tangle net only)	\$95,714	\$95,714	\$95,714	\$95,714	\$95,714	\$95,714	\$95,714
				Summer Chinook	\$0	\$0	\$0	\$0	\$0	\$0	\$0
			Fall Chinook	\$1,601,039	\$1,601,039	\$1,601,039	\$1,601,039	\$1,601,039	\$1,601,039	\$1,601,039	
			Coho	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
		Select Area Gillnet	Spring Chinook	\$1,139,759	\$1,234,242	\$1,484,315	\$1,521,089	\$1,533,958	\$1,546,174	\$1,719,389	
			Fall Chinook	\$182,549	\$182,116	\$174,022	\$181,356	\$206,120	\$216,296	\$216,296	
			Coho	\$598,242	\$619,859	\$624,983	\$624,983	\$624,983	\$624,983	\$624,983	
		Mainstem Seine	Beach Chinook/Coho	\$8,534	\$8,534	\$8,534	\$8,534	\$8,534	\$8,534	\$8,534	
			Purse Chinook/Coho	\$22,453	\$22,453	\$22,453	\$22,453	\$22,453	\$22,453	\$22,453	
		Mainstem Tangle Net	Coho	\$49,740	\$49,740	\$49,740	\$49,740	\$49,740	\$49,740	\$49,740	
		Total Commercial		\$3,698,031	\$3,813,698	\$4,060,801	\$4,104,908	\$4,142,541	\$4,164,933	\$4,338,148	
	Contribution to Total Sport Angler Trips by Fishery	Spring	Spring Chinook	115,469	115,469	115,469	115,469	115,469	115,469	115,469	
	Summer	Summer Chinook	25,147	25,147	25,147	25,147	25,147	25,147	25,147		
	Fall-Buoy 10	Fall Chinook/Coho	90,002	90,002	90,002	90,002	90,002	90,002	90,002		
	Fall-Mainstem	Fall Chinook/Coho	121,959	121,959	121,959	121,959	121,959	121,959	121,959		
	Total Sport		352,577	352,577	352,577	352,577	352,577	352,577	352,577		

<sup>1</sup> Angler trip estimates apply to recreational fisheries downstream of Bonneville Dam. Angler effort data from creel surveys for all fisheries and areas upstream of Bonneville Dam affected by the policy are not available, particularly during 2013-2016 (4/6 years on which the model is based)

<sup>2</sup> "Without Policy" angler trips and ex-vessel value represent the average number of trips and average ex-vessel value expected for 2013-2018 had the Harvest Reform Policy not been implemented (with adjusted SAB fall Chinook releases). These averages are used as the baseline values for 2020.

<sup>3</sup> Local Personal Income Impact is a measure of the impact to local economies in the Oregon/Washington region associated with angler trips in the lower Columbia River sport fishery (e.g. gas, food, lodging, guide fees, etc.), and the impact to local economies of lower Columbia River commercially landed salmon (e.g. value to processors, wholesalers, etc.). Sport and commercial value multipliers from the 2016 Input-Output Pacific Fisheries (I-O PAC) model were applied to total angler trips and ex-vessel value for the respective fisheries. Different multipliers were applied to estimated guided and non-guided angler trips in the sport fishery.

<sup>4</sup> Select Area production shown in the model inputs section represent expected near term average production levels, and are less than current Oregon Policy goals (3.7 million spring Chinook, 1.0 million SAB fall Chinook, 5.255 million Coho). These average production expectations were estimated based on actual production relative to production targets since 2013 for spring Chinook and Coho, and recent poor returns/production of SAB fall Chinook.

<sup>5</sup> The values in the "SAFE CHS @ 3.515M" column represent the policy option shown, except the Select Area ex-vessel value of spring Chinook is increased assuming full production releases (95% of 3.7M) can be achieved

<sup>6</sup> Policy options A, B, and D would allow fall non-treaty mainstem gillnet fishing in commercial Zones 1-5, while Option C restricts the fishing area to Zones 4-5 (upstream of the Lewis River). However, modeling for all options (A-D) assumes the vast majority of fishing and harvest would occur in Zones 4-5, similar to what occurred in 2013-2019. Since 2007, the non-treaty Chinook-directed commercial fishery has progressively focused more on Zones 4-5 during the fall season due to reductions in the overall allowed exploitation rate on lower Columbia River fall Chinook. If the amount of fishing in Zones 1-5 deviated from what has occurred recently, e.g. in early August, modeled values could differ from those presented here.

**Table 5.**

<b>Option D</b>	<b>Model Inputs</b>	<b>Fishery</b>	<b>Metric</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>SAFE CHS @ 3.515M<sup>5</sup></b>		
<b>Spring WA Policy, Summer OR allocation with PRC gears, Fall Alternative 2 (with Oregon Policy SAFE hatchery production expectations)</b>	Spring allocation 70% sport/30% commercial (pre-run update commercial buffer) with pre-update mainstem tangle net and post-update tangle net/gillnet allowed; Summer allocation 80% sport/20% commercial with mainstem gillnets and alternative gears allowed; Fall LRH tulle/URB allocation ≤65% sport/≥35% commercial with gillnets allowed in Zones 1-5; mark-selective beach and purse seine fishery at average value and frequency of occurrence during 2014-2018; Coho 6" gillnet fishery and mark-selective Coho tangle net fishery at average value and frequency of occurrence during 2013-2018; SAFE releases <sup>4</sup> : CHS 3.149M (2024-25 return), SAB ~0.45M (2020-25 return), Coho 4.83M (2022-25 return)	Sport	Total Angler Trips <sup>1</sup>	350,775	350,775	350,775	350,775	350,775	350,775	350,775	350,775	
			Without Policy Angler Trips <sup>2</sup>	339,846	339,846	339,846	339,846	339,846	339,846	339,846	339,846	339,846
			Angler Trip Δ	10,929	10,929	10,929	10,929	10,929	10,929	10,929	10,929	10,929
			Angler Trip Δ %	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%
			Local Personal Income Impact <sup>3</sup>	\$27,516,050	\$27,516,050	\$27,516,050	\$27,516,050	\$27,516,050	\$27,516,050	\$27,516,050	\$27,516,050	\$27,516,050
		Commercial	Total Ex-Vessel Value	\$4,406,392	\$4,522,060	\$4,769,163	\$4,813,270	\$4,850,902	\$4,873,294	\$5,046,509		
			Without Policy Ex-Vessel Value <sup>2</sup>	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500		
			Ex-Vessel Value Δ	(\$340,108)	(\$224,440)	\$22,663	\$66,770	\$104,402	\$126,794	\$300,009		
			Ex-Vessel Value Δ %	-7.2%	-4.7%	0.5%	1.4%	2.2%	2.7%	6.3%		
			Local Personal Income Impact	\$7,385,470	\$7,579,338	\$7,993,503	\$8,067,430	\$8,130,505	\$8,168,036	\$8,458,358		
	Combined	Local Personal Income Impact	\$34,901,520	\$35,095,388	\$35,509,553	\$35,583,480	\$35,646,555	\$35,684,086	\$35,974,408			
	Contribution to Total Commercial Ex-Vessel Value by Fishery	Mainstem Gillnet <sup>6</sup>	Spring Chinook (Tangle net & Gilln	\$313,257	\$313,257	\$313,257	\$313,257	\$313,257	\$313,257	\$313,257	\$313,257	
			Summer Chinook	\$101,216	\$101,216	\$101,216	\$101,216	\$101,216	\$101,216	\$101,216	\$101,216	
			Fall Chinook	\$1,894,215	\$1,894,215	\$1,894,215	\$1,894,215	\$1,894,215	\$1,894,215	\$1,894,215	\$1,894,215	
			Coho	\$96,427	\$96,427	\$96,427	\$96,427	\$96,427	\$96,427	\$96,427	\$96,427	
		Select Area Gillnet	Spring Chinook	\$1,139,759	\$1,234,242	\$1,484,315	\$1,521,089	\$1,533,958	\$1,546,174	\$1,719,389		
			Fall Chinook	\$182,549	\$182,116	\$174,022	\$181,356	\$206,120	\$216,296	\$216,296		
			Coho	\$598,242	\$619,859	\$624,983	\$624,983	\$624,983	\$624,983	\$624,983		
		Mainstem Seine	Beach Chinook/Coho	\$8,534	\$8,534	\$8,534	\$8,534	\$8,534	\$8,534	\$8,534		
			Purse Chinook/Coho	\$22,453	\$22,453	\$22,453	\$22,453	\$22,453	\$22,453	\$22,453		
Mainstem Tangle Net		Coho	\$49,740	\$49,740	\$49,740	\$49,740	\$49,740	\$49,740	\$49,740			
Total Commercial			\$4,406,392	\$4,522,060	\$4,769,163	\$4,813,270	\$4,850,902	\$4,873,294	\$5,046,509			
Contribution to Total Sport Angler Trips by Fishery		Spring	Spring Chinook	115,469	115,469	115,469	115,469	115,469	115,469	115,469		
		Summer	Summer Chinook	25,147	25,147	25,147	25,147	25,147	25,147	25,147		
		Fall-Buoy 10	Fall Chinook/Coho	89,237	89,237	89,237	89,237	89,237	89,237	89,237		
		Fall-Mainstem	Fall Chinook/Coho	120,922	120,922	120,922	120,922	120,922	120,922	120,922		
	Total Sport		350,775	350,775	350,775	350,775	350,775	350,775	350,775			

<sup>1</sup> Angler trip estimates apply to recreational fisheries downstream of Bonneville Dam. Angler effort data from creel surveys for all fisheries and areas upstream of Bonneville Dam affected by the policy are not available, particularly during 2013-2016 (4/6 years on which the model is based)

<sup>2</sup> "Without Policy" angler trips and ex-vessel value represent the average number of trips and average ex-vessel value expected for 2013-2018 had the Harvest Reform Policy not been implemented (with adjusted SAB fall Chinook releases). These averages are used as the baseline values for 2020.

<sup>3</sup> Local Personal Income Impact is a measure of the impact to local economies in the Oregon/Washington region associated with angler trips in the lower Columbia River sport fishery (e.g. gas, food, lodging, guide fees, etc.), and the impact to local economies of lower Columbia River commercially landed salmon (e.g. value to processors, wholesalers, etc.). Sport and commercial (e.g. value to processors, wholesalers, etc.). Sport and commercial (e.g. value to processors, wholesalers, etc.) value multipliers from the 2016 Input-Output Pacific Fisheries (I-O PAC) model were applied to total angler trips and ex-vessel value for the respective fisheries. Different multipliers were applied to estimated guided and non-guided angler trips in the sport fishery.

<sup>4</sup> Select Area production shown in the model inputs section represent expected near term average production levels, and are less than current Oregon Policy goals (3.7 million spring Chinook, 1.0 million SAB fall Chinook, 5.255 million Coho). These average production expectations were estimated based on actual production relative to production targets since 2013 for spring Chinook and Coho, and recent poor returns/production of SAB fall Chinook.

<sup>5</sup> The values in the "SAFE CHS @ 3.515M" column represent the policy option shown, except the Select Area ex-vessel value of spring Chinook is increased assuming full production releases (95% of 3.7M) can be achieved

<sup>6</sup> Policy options A, B, and D would allow fall non-treaty mainstem gillnet fishing in commercial Zones 1-5, while Option C restricts the fishing area to Zones 4-5 (upstream of the Lewis River). However, modeling for all options (A-D) assumes the vast majority of fishing and harvest would occur in Zones 4-5, similar to what occurred in 2013-2019. Since 2007, the non-treaty Chinook-directed commercial fishery has progressively focused more on Zones 4-5 during the fall season due to reductions in the overall allowed exploitation rate on lower Columbia River fall Chinook. If the amount of fishing in Zones 1-5 deviated from what has occurred recently, e.g. in early August, modeled values could differ from those presented here.

**Table 6.**

For Reference	Model Inputs	Fishery	Metric	2020	2021	2022	2023	2024	2025	
<b>Pre-Policy (2010-2012 base)</b>	Pre-Reform allocations using base 2010-2012 averages; Spring 60% sport/40% commercial (pre-run update commercial buffer), with pre-update mainstem tangle net and post-update tangle net/gillnet allowed; Summer 50% sport/50% commercial with mainstem gillnets allowed; Fall LRH tule/URB 59% sport/41% commercial with gillnets allowed in Zones 1-5; Coho 6" gillnet fishery; SAFE releases at pre-Reform base levels <sup>4</sup> : CHS 1.55M, SAB ~0.45M, Coho 4.17M	Sport	Total Angler Trips <sup>1</sup>	339,846	339,846	339,846	339,846	339,846	339,846	
			Without Policy Angler Trips <sup>2</sup>	339,846	339,846	339,846	339,846	339,846	339,846	
			Angler Trip Δ	0	0	0	0	0	0	
			Angler Trip Δ %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
			Local Personal Income Impact <sup>3</sup>	\$26,686,584	\$26,686,584	\$26,686,584	\$26,686,584	\$26,686,584	\$26,686,584	
		Commercial	Total Ex-Vessel Value	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500
			Without Policy Ex-Vessel Value <sup>2</sup>	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500
			Ex-Vessel Value Δ	0	0	0	0	0	0	
			Ex-Vessel Value Δ %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
			Local Personal Income Impact	\$7,955,518	\$7,955,518	\$7,955,518	\$7,955,518	\$7,955,518	\$7,955,518	
		Combined	Local Personal Income Impact	\$34,642,102	\$34,642,102	\$34,642,102	\$34,642,102	\$34,642,102	\$34,642,102	\$34,642,102
		Contribution to Total Commercial Ex-Vessel Value by Fishery	Mainstem Gillnet	Spring Chinook (Tangle net & Gilln	\$487,115	\$487,115	\$487,115	\$487,115	\$487,115	\$487,115
Summer Chinook	\$248,598			\$248,598	\$248,598	\$248,598	\$248,598	\$248,598		
Fall Chinook	\$2,363,775			\$2,363,775	\$2,363,775	\$2,363,775	\$2,363,775	\$2,363,775		
Coho	\$110,991			\$110,991	\$110,991	\$110,991	\$110,991	\$110,991		
Select Area Gillnet	Spring Chinook		\$807,025	\$807,025	\$807,025	\$807,025	\$807,025	\$807,025		
	Fall Chinook		\$190,410	\$190,410	\$190,410	\$190,410	\$190,410	\$190,410		
	Coho		\$538,586	\$538,586	\$538,586	\$538,586	\$538,586	\$538,586		
Mainstem Seine	Beach Chinook/Coho		\$0	\$0	\$0	\$0	\$0	\$0		
	Purse Chinook/Coho		\$0	\$0	\$0	\$0	\$0	\$0		
Mainstem Tangle Net	Coho		\$0	\$0	\$0	\$0	\$0	\$0		
Total Commercial			\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500	\$4,746,500		
Contribution to Total Sport Angler Trips by Fishery	Spring		Spring Chinook	109,138	109,138	109,138	109,138	109,138	109,138	
	Summer		Summer Chinook	22,350	22,350	22,350	22,350	22,350	22,350	
	Fall-Buoy 10		Fall Chinook/Coho	88,472	88,472	88,472	88,472	88,472	88,472	
	Fall-Mainstem	Fall Chinook/Coho	119,886	119,886	119,886	119,886	119,886	119,886		
	Total Sport		339,846	339,846	339,846	339,846	339,846	339,846		

<sup>1</sup> Angler trip estimates apply to recreational fisheries downstream of Bonneville Dam. Angler effort data from creel surveys for all fisheries and areas upstream of Bonneville Dam affected by the policy are not available, particularly during 2013-2016 (4/6 years on which the model is based).

<sup>2</sup> "Without Policy" angler trips and ex-vessel value represent the average number of trips and average ex-vessel value expected for 2013-2018 had the Harvest Reform Policy not been implemented (with adjusted SAB fall Chinook releases). These averages are used as the baseline values for 2020-2025.

<sup>3</sup> Local Personal Income Impact is a measure of the impact to local economies in the Oregon/Washington region associated with angler trips in the lower Columbia River sport fishery (e.g. gas, food, lodging, guide fees, etc.), and the impact to local economies of lower Columbia River commercially landed salmon (e.g. value to processors, wholesalers, etc.). Sport and commercial value multipliers from the 2016 Input-Output Pacific Fisheries (I-O PAC) model were applied to total angler trips and ex-vessel value for the respective fisheries. Different multipliers were applied to estimated guided and non-guided angler trips in the sport fishery.

<sup>4</sup> Select Area releases shown for spring Chinook and Coho reflect release goals in effect during 2010-2012. The average near term release expectation of ~0.45M for SAB fall Chinook is less than the release target in 2010-2012 (1.45M) due to recent poor returns/releases of SAB fall Chinook.



**Table 7. Summary of sport fishery angler trips and commercial ex-vessel value for the pre-Policy base, and policy option modeling estimates for 2020 and 2025<sup>1</sup>**

		Pre-Policy (2010-2012 base)	Modeling Estimates for 2020				Modeling Estimates for 2025			
			Option A - 2019 Washington Policy (with Oregon Policy production expectations)	Option B - Oregon allocations (with revised allowable gear per PRC)	Option C - Current Oregon Policy	Option D - Spring WA Policy, Summer OR allocation with PRC gears, Fall Alternative 2 (with Oregon Policy production expectations)	Option A - 2019 Washington Policy (with Oregon Policy production expectations)	Option B - Oregon allocations (with revised allowable gear per PRC)	Option C - Current Oregon Policy	Option D - Spring WA Policy, Summer OR allocation with PRC gears, Fall Alternative 2 (with Oregon Policy production expectations)
Economic Metrics	Sport Angler Trips	339,846	349,780	352,577	352,577	350,775	349,780	352,577	352,577	350,775
	Commercial Ex-Vessel Value	\$4,746,500	\$4,126,178	\$3,883,331	\$3,698,031	\$4,406,392	\$4,593,080	\$4,350,233	\$4,164,933	\$4,873,294
Angler Trip Detail	Spring Chinook	109,138	115,469	115,469	115,469	115,469	115,469	115,469	115,469	115,469
	Summer Chinook	22,350	22,350	25,147	25,147	25,147	22,350	25,147	25,147	25,147
	Buoy 10 (Fall Chinook/Coho)	88,472	90,002	90,002	90,002	89,237	90,002	90,002	90,002	89,237
	Mainstem (Fall Chinook/Coho)	119,886	121,959	121,959	121,959	120,922	121,959	121,959	121,959	120,922
Commercial Ex-Vessel Detail	Mainstem Spring Chinook	\$487,115	\$313,257	\$95,714	\$95,714	\$313,257	\$313,257	\$95,714	\$95,714	\$313,257
	Mainstem Summer Chinook	\$248,598	\$126,520	\$101,216	\$0	\$101,216	\$126,520	\$101,216	\$0	\$101,216
	Mainstem Fall Chinook	\$2,363,775	\$1,588,696	\$1,588,696	\$1,601,039	\$1,894,215	\$1,588,696	\$1,588,696	\$1,601,039	\$1,894,215
	Coho 6-in Gillnet	\$110,991	\$96,427	\$96,427	\$0	\$96,427	\$96,427	\$96,427	\$0	\$96,427
	Beach Seine (Chinook/Coho)	\$0	\$8,534	\$8,534	\$8,534	\$8,534	\$8,534	\$8,534	\$8,534	\$8,534
	Purse Seine (Chinook/Coho)	\$0	\$22,453	\$22,453	\$22,453	\$22,453	\$22,453	\$22,453	\$22,453	\$22,453
	Coho Tangle Net	\$0	\$49,740	\$49,740	\$49,740	\$49,740	\$49,740	\$49,740	\$49,740	\$49,740
	Mainstem Total	\$3,210,479	\$2,205,628	\$1,962,781	\$1,777,481	\$2,485,842	\$2,205,628	\$1,962,781	\$1,777,481	\$2,485,842
	SAFE Spring Chinook	\$807,025	\$1,139,759	\$1,139,759	\$1,139,759	\$1,139,759	\$1,546,174	\$1,546,174	\$1,546,174	\$1,546,174
	SAFE Fall Chinook	\$190,410	\$182,549	\$182,549	\$182,549	\$182,549	\$216,296	\$216,296	\$216,296	\$216,296
	SAFE Coho	\$538,586	\$598,242	\$598,242	\$598,242	\$598,242	\$624,983	\$624,983	\$624,983	\$624,983
	SAFE Total	\$1,536,021	\$1,920,550	\$1,920,550	\$1,920,550	\$1,920,550	\$2,387,453	\$2,387,453	\$2,387,453	\$2,387,453

**Sum of mainstem and SAFE ex-vessel values may not match total commercial ex-vessel value due to rounding.**

<sup>1</sup> See Future SAFE Funding and Implications on Options (Tables 8 and 9).

**ODFW ANALYSIS OF FUTURE SAFE FUNDING AND IMPLICATIONS ON OPTIONS.**

Increased SAFE production associated with Oregon Columbia Reform funding, primarily from the Columbia Basin Endorsement fee (CBE; paid by Oregon recreational anglers), is projected to contribute ~\$825,000 to ~\$1,000,000 per year (depending on level of Oregon SAFE production achieved <sup>a</sup>) to total Commercial Ex-Vessel values once all brood years from recently increased production have begun returning (Table 8).

The CBE is set to expire at the end of 2021 and ODFW intends to seek extension of the fund, as we unsuccessfully did in 2019. If the sunset provision is not removed or extended all scenarios presented risk losing enhanced off-channel production. Absent the Oregon funding for off-channel production, the total commercial ex-vessel values shown in these modeled scenarios would be reduced. Based on the outcome of the 2019 legislative session, Oregon staff believe that Options A, B, and D, pose additional risk to successfully extending the Oregon CBE compared to Oregon’s existing policy (Option C). Potential effects of this outcome on projected ex-vessel values are shown in Table 9 below. Unlike Select Area commercial fisheries, loss of the enhanced off-channel production would have limited direct impact to recreational fisheries. However, if the CBE sunsets, reductions in monitoring supported by this fund would further constrain both recreational and commercial fisheries, though this effect cannot be quantified. Additionally, if the loss of the CBE resulted in a further increase in allocation for commercial fisheries to make up for reduced off-channel production, then additional reductions in recreational fisheries would occur, perhaps aligning more with pre-policy outcomes (Table 6).

As an example, for Option A, the long-term modeled total commercial ex-vessel value (at 85% of the Spring Chinook release goal) is \$4.59 m; this value would be \$3.77 m without Oregon-funded SAFE production, a reduction in ex-vessel value of 18%. Option A without Oregon-funded production would be 10% lower in total commercial ex-vessel value than current Oregon policy (Option C). As described above, if this loss in commercial value resulted in additional commercial allocations, additional reductions in recreational opportunity would also be expected.

Table 8.	SAFE Ex-vessel Value							
	Oregon Policy (Long-term)		w/o Policy	Additional EV from OR Funded SAFE Production		% Increase Attributable to OR Funded SAFE		
	SAFE CHS production at 85% of goal; 3.149 m	SAFE CHS production at 95% of goal; 3.515 m		at 85% of goal; 3.149 m	SAFE CHS production at 95% of goal; 3.515 m	SAFE CHS production at 85% of goal <sup>a</sup> ; 3.149 m	SAFE CHS production at 95% of goal <sup>a</sup> ; 3.515 m	
SAFE Spring Chinook	\$ 1,546,174	\$ 1,719,389	\$ 807,025	\$ 739,149	\$ 912,364	92%	113%	
SAFE Fall Chinook	\$ 216,296	\$ 216,296	\$ 216,296	\$ (0)	\$ (0)	0%	0%	
SAFE Coho	\$ 624,983	\$ 624,983	\$ 538,586	\$ 86,397	\$ 86,397	16%	16%	
Sum	\$ 2,387,452	\$ 2,560,667	\$ 1,561,907	\$ 825,545	\$ 998,760	53%	64%	

Table 9.	SAFE at 85% of CHS release goal (3.149 m)				SAFE at 95% of CHS release goal (3.515 m)			
	Ex-vessel as modeled	Ex-vessel w/o OR funds	% Difference between "as modeled" and "w/o OR Funds"	% Difference between "OR Policy" and option "w/o OR Funds"	As modeled	w/o OR funds	% Difference between "as modeled" and "w/o OR Funds"	% Difference between "OR Policy" and option "w/o OR Funds"
Option A	\$ 4,593,080	\$ 3,767,535	-18%	-10%	\$ 4,766,295	\$ 3,767,535	-21%	-13%
Option B	\$ 4,350,233	\$ 3,524,688	-19%	-15%	\$ 4,523,448	\$ 3,524,688	-22%	-19%
Option C (OR Policy)	\$ 4,164,933	NA	NA	NA	\$ 4,338,148	NA	NA	NA
Option D	\$ 4,873,294	\$ 4,047,749	-17%	-3%	\$ 5,046,509	\$ 4,047,749	-20%	-7%

<sup>a</sup> See CHS production footnotes on policy option sheets