



2023 Specifications: The Interior Market Pricing System

July 1, 2023

Timber Pricing Branch



Specifications: The Interior Market Pricing System

Table of Contents

1	Source Data	2
2	Calculating The MPS Stumpage Rate.....	3
	Appendix 1: Explanation Of Variables Used In The Auction Dataset But Not In Implementation	11
	Appendix 2: Deciduous Volume And The Prorating Of Forest Management Administration And Road Management TOAs	12
	Appendix 3: Applicable Volume And The Calculation Of Development Cost Estimates	13

Specifications: The Interior Market Pricing System

Disclaimer:

This document is for information only and has no legal authority. It is intended to complement the IAM by providing additional technical details such as rounding rules. If there are any inconsistencies between this document and the IAM then the IAM shall prevail. If there are any rounding or other calculation differences between this document and GAS then GAS shall prevail.

1 SOURCE DATA

Naming conventions for source data used throughout this document are as follows.

PAR	=	2-month average market values and other parameters published monthly.
IAM	=	<i>Interior Appraisal Manual.</i>
Mark	=	refers to values on the corporate data base for each mark.
Mark/IAM	=	refers to site data for the mark and cost estimates from current <i>Interior Appraisal Manual.</i>
APP X	=	refers to an appendix of this document.
S X.X.X	=	refers to steps described in this document.

Specifications: The Interior Market Pricing System

2 CALCULATING THE MPS STUMPAGE RATE

Step #		Calculation	Units	Decimal Places	Source/ Value	Rounding
1		CPIF	ratio			yes
	=	current CPI	4		PAR	
	/	base CPI	1		173.8	
2		Real Selling Price (RSP) Contribution	\$/m³	2		
	=	Selling Price	\$/m ³	2	S 2.5	
	*	Selling Price coefficient			S 2.1	
2.1		Selling Price coefficient				
	=	0.3402 if scale based (SB), 0.1876 if cruise based (CB)			IAM	
2.2		SB indicator				
	=	1 if SB, 0 otherwise				
2.3		CB indicator				
	=	1 if CB, 0 otherwise				
2.4		RSP		4		yes
	=	Selling Price	\$/m ³		S 2.5	
	/	CPIF			S 1	
2.5		Selling Price	\$/m ³	2		yes
	=	stand value	\$	2	S 2.7	
	/	CONVOL	m ³	0	S 2.6	
2.6		CONVOL	m ³	0	Mark	
	=	sum of coniferous species cruise volumes	m ³			
2.7		stand value	\$	2		
	=	sum of species values	\$		S 2.8	
2.8		species value	\$	2		
	=	species selling price	\$/m ³		S 2.9	
	*	species cruise volume	m ³	0	Mark	
2.9		species selling price	\$/m ³	2		
	=	species appraisal LRF	fbm/m ³		S 2.10	
	*	species lumber AMV	\$/fbm		S 2.11	
2.10		species appraisal LRF	fbm/m ³	0		
	=	species cruise LRF ¹	fbm/m ³	0	Mark	
	+	species LRF add-on	fbm/m ³	0	IAM	
2.11		species lumber AMV (fbm)	\$/fbm	3		

¹ If cruise LRF for lodgepole pine has been reduced for Mountain Pine Beetle volume, the reduction must be added back in as follows (rounded to zero decimal places): final Cruise LRF = Cruise LRF + (green attack volume*3+red attack volume*33+grey attack volume*83)/lodgepole pine net volume

Specifications: The Interior Market Pricing System

	=	species lumber AMV (Mbm)	\$/Mbm	0	PAR	
	/	1000				
3		Cedar (CE) contribution	\$/m³	2		yes
	=	CE fraction			S 3.1	
	*	CE fraction coefficient			36.47	
3.1		CE fraction	fraction	4		yes
	=	CE cruise volume	m ³	0	Mark	
	/	CONVOL	m ³	0	S 2.6	
4		CE DECAy contribution	\$/m³	2		yes
	=	CE decay fraction			S 4.1	
	*	CE DECAy fraction coefficient			- 154.0	
4.1		CE DECAy fraction	fraction	4		yes
	=	CE DECAy %		2	TM cruise info	
	/	100				
5		Hemlock (HE) contribution	\$/m³	2		yes
	=	HE fraction			S 5.1	
	*	HE fraction coefficient			- 29.42	
5.1		HE fraction	fraction	4		yes
	=	HE volume	m ³	0	Mark	yes
	/	CONVOL	m ³	0	S 2.6	yes
6		Balsam (BA) contribution	\$/m³	2		yes
	=	Balsam fraction ²			S 6.1	
	*	BA fraction coefficient			- 14.17	
6.1		Balsam fraction ²	fraction	4		yes
	=	Balsam fraction			S 6.2	
	*	Balsam fraction			S 6.2	
6.2		Balsam fraction	fraction	4		yes
	=	BA volume	m ³	0	Mark	yes
	/	CONVOL	m ³	0	S 2.6	yes
7		Larch/Yellow Pine (LAYE) contribution	\$/m³	2		yes
	=	LAYE fraction			S 7.1	
	*	LAYE fraction coefficient			- 19.32	
7.1		LAYE fraction	fraction	4		yes
	=	LAYE volume	m ³	0	S 7.2	
	/	CONVOL	m ³	0	S 2.6	
7.2		LAYE volume	m ³	0		
	=	larch cruise volume	m ³	0	Mark	
	+	yellow pine cruise volume	m ³	0	Mark	
8		cable yarding contribution	\$/m³	2		yes
	=	cable yarding fraction			S 8.1	
	*	cable yarding fraction coefficient			- 24.68	

Specifications: The Interior Market Pricing System

8.1		cable yarding fraction	fraction	4		yes
	=	cable yarding volume	m ³	0	Mark/IAM3.3	
	/	HARVOL			S 8.2	
8.2		HARVOL	m ³	0		yes
	=	sum of all harvest method volumes	m ³	0	Mark	
9		LOGVOL contribution	\$/m³	2		yes
	=	LOGVOL			S 9.1	
	*	LOGVOL coefficient			3.563	
9.1		LOGVOL		4		yes
	=	Natural logarithm (EFFVOL/1000)			S 9.2	
9.2		EFFVOL		0		yes
	=	Effective coniferous volume	m ³		IAM	
10		SB ((DECAY - OTHER ATTACK) or (Net DECAY)) contribution	\$/m³	2		yes
	=	SB indicator			S 2.2	
	*	SB Net DECAY fraction coefficient			- 16.92	
	*	Net DECAY fraction			S10.1	
10.1		Net DECAY fraction	fraction	4		yes
	=	DECAY fraction	fraction		S 10.4	
	-	OTHER ATTACK	fraction		S 10.3	
10.2		Net DECAY				
	=	0 if Net DECAY < 0				
10.3		OTHER ATTACK	fraction	4		
	=	Insect attack other than Defoliators or Mountain Pine Beetle attacked Lodgepole pine volume	m ³	0	Mark	
	/	CONVOL	m ³	0	S 2.6	
10.4		Decay fraction	fraction	4		yes
	=	sum of species decay percent prorates	%		S 10.5	
	/	100				
10.5		species decay percent prorates	%	0		
	=	species decay percent	%	0	Mark	
	*	species cruise volume	m ³	0	Mark	
	/	CONVOL	m ³	0	S 2.6	
11		Fire Damage contribution	\$/m³	2		yes
	=	fire damage fraction			S 11.1	
	*	fire damage fraction coefficient			- 36.39	
11.1		fire damage fraction	fraction	4		yes
	=	sum of fire damage fraction prorates	%		S 11.2	
11.2		species fire damage fraction prorate	%	0		
	=	species fire damage percent	%	0	Mark	
	*	species cruise volume	m ³	0	Mark	

Specifications: The Interior Market Pricing System

	/	CONVOL	m ³	0	S 2.6	
	/	100				
12		LOGVPT contribution	\$/m³	2		yes
	=	LOGVPT			S 12.1	
	*	LOGVPT coefficient			8.827	
12.1		LOGVPT		4		yes
	=	natural logarithm (VPT)		2	Mark	
13		Cycle Time contribution	\$/m³	2		yes
	=	effective cycle time			S 13.1	
	*	cycle time coefficient			- 2.306	
13.1		effective cycle time	hours	1		
	=	cycle time	hours	1	S 13.2	yes
	+	incremental cycle time	hours	1	S 13.3	yes
13.2		cycle time	hours	1		yes
	=	primary cycle time	hours	1	Mark	
	+	secondary cycle time	hours	1	Mark	
13.3		incremental cycle time				
	=	0.5*(cycle time - 6)	hours	1	S 13.2	
		note: If cycle time < 6, then incremental cycle time = 0				
14		Fort Nelson Peace (ZONE 9) contribution	\$/m³	2		yes
	=	ZONE 9			S 14.1	
	*	ZONE 9 coefficient			- 7.778	
14.1		ZONE 9				
	=	1 if Zone 9, 0 otherwise		0	Mark	
15		CB ((DECID - BLOWDOWN) or (Net DECID)) contribution	\$/m³	2		yes
	=	CB indicator			S 2.3	
	*	CB Net DECID fraction coefficient			- 19.37	
	*	Net DECID fraction			S 15.1	
15.1		Net DECID fraction	fraction	4		yes
	=	DECID fraction	fraction			
	-	BLOWDOWN fraction	fraction			
15.2		DECID fraction		4		yes
	=	Deciduous Volume	m ³	0	Mark	
	/	Net Cruise Volume (NCV)	m ³	0	Mark	
15.3		Net DECID				
	=	0 if Net DECID fraction < 0				
15.4		BLOWDOWN fraction	Fraction	4		yes
	=	sum of blowdown fraction prorates	%		S 15.5	
15.5		Blowdown fraction prorate		0		

Specifications: The Interior Market Pricing System

	=	Blowdown percent by harvest method	%	0	Mark	
	*	Harvest method volume	m ³	0	Mark	
	/	HARVOL	m ³	0	S 8.2	
	/	100				
16		CB contribution	\$/m³	2		yes
	=	CB indicator			S 2.3	
	*	CB coefficient			S 16.4	
16.1		RG35				
	=	1 if RG35 fraction is greater than or equal to 0.35, 0 otherwise				
16.2		RG35	fraction	4		no
	=	RG volume	m ³	0	S 16.3	
	/	CONVOL	m ³	0	S 2.6	
16.3		RG volume	m ³	0		
	=	MPB red attack volume	m ³	0	Mark	
	+	MPB grey attack volume	m ³	0	Mark	
16.4		CB coefficient	\$/m ³	2		yes
	=	+ 9.978*(1-rg35) + 0.6152*rg35			IAM	
17		GREY contribution	\$/m³	2		yes
	=	Grey fraction ²			S 17.1	
	*	GREY fraction coefficient			- 10.81	
17.1		Grey fraction ²	fraction	4		yes
	=	Grey fraction				
	/	Grey fraction				
17.2		Grey fraction	fraction	4		yes
	=	Lodgepole pine GREY attack volume	m ³	0	Mark	
	*	CONVOL	m ³	0	S 2.6	
18		DANB contribution	\$/m³	2		yes
	=	DANB			IAM	
	*	DANB coefficient			2.546	
19		PC20 contribution	\$/m³	2		yes
	=	PC20 fraction			S 19.2	
	*	PC20 coefficient			- 32.79	
19.1		PC fraction	fraction	4		yes
	=	1				
	-	CAPCUT%			Mark/IAM	
	/	100				
19.2		PC20 fraction	fraction	4		
	=	PC - 0.2				
	/	0.8				
19.3		PC20				
	=	0 if PC20 < 0				

Specifications: The Interior Market Pricing System

19.4		PC20				
	=	100 if PC20 > 1				
20		Slope15 contribution	\$/m³	2		yes
	=	Slope15	%		Mark	
	*	Slope15 coefficient			- 0.2616	
20.1		Slope15	%	0	Mark	
	=	(Slope – 15)				
20.2		Slope15				
	=	0 if slope is < 15%				
21		(BLOWDOWN - GREY) or (Net BLOWDOWN) contribution	\$/m³	2		yes
	=	Net BLOWDOWN FRACTION			S 21.1	
	*	Net BLOWDOWN fraction coefficient			- 26.67	
21.1		Net BLOWDOWN fraction	fraction	4		yes
	=	BLOWDOWN fraction	fraction		S 15.4	
	-	GREY fraction	fraction		S 17.2	
21.2	=	Net BLOWDOWN 0 if Net BLOWDOWN fraction < 0				
22		EXCHANGE contribution	\$/m³	2		yes
	=	EXCHANGE			PAR	
	*	EXCHANGE coefficient			-43.69	
23		AAC_DELTA_12MR contribution	\$/m³	2		yes
	=	AAC_DELTA_12MR			PAR	
	*	AAC_DELTA_12MR coefficient			- 0.8285	
24		ISOLATED contribution	\$/m³	2		yes
	=	ISOLATED			S 24.1	
	*	ISOLATED coefficient			- 0.2303	
24.1		ISOLATED				
	=	1 if the DISTANCE is greater than 200 km			Mark	
24.2		ISOLATED				
	=	0 if the DISTANCE is less than or equal to 200 km			IAM Table 3-4	
25		CAMP contribution	\$/m³	2		yes
	=	CAMP			S 25.1	
	*	CAMP coefficient			- 2.684	
25.1		CAMP	Fraction	0		
	=	Camp Applicable volume	m ³	0	Mark	
	/	CONVOL + Deciduous volume	m ³	0	Mark	
26		OTHER_ATTACK contribution	\$/m³	2		yes

Specifications: The Interior Market Pricing System

	=	OTHER_ATTACK			\$ 26.1	
	*	OTHER_ATTACK coefficient			- 45.02	
		OTHER_ATTACK				
26.1	=	Attack volume other than Defoliators or MPB attacked Lodgepole pine	m ³	0	Mark	
	/	NCV	m ³	0	Mark	
27		Estimated Winning Bid	\$/m³	2		yes
	=	maximum of: 0.25 or real estimated winning bid	\$/m ³	2	S 35	
	*	CPIF			S 1	
28		Final Specified Operations		2		yes
	=	specified operations			S 28.1	
	*	CBCPIF			S 33.3	
28.1		Specified Operations	\$/m ³	2		yes
	=	water transportation	\$/m ³	2	Mark/IAM	
	+	special transportation systems	\$/m ³	2	Mark/IAM	
	+	Skyline and Intermediate Support Skyline	\$/m ³	2	Mark/IAM	
	+	heli logging	\$/m ³	2	Mark IAM	
	+	horse logging	\$/m ³	2	Mark IAM	
	+	high development cost (BCTS only)	\$/m ³	2	Mark IAM	
	+	Uneven-Aged Forest Management	\$/m ³	2	Mark IAM	
29		Final Estimated Winning Bid	\$/m³	2		
	=	max of: 0.25 or (estimated winning bid	\$/m ³	2	S27	
	-	final specified operations)			S28	
30		Final TOA	\$/m³	2		yes
	=	TOA subtotal 2		2	S 30.1	
	+	return to forest management		2	S 32	
	-	MLC subtotal 1		2	S33.2	
30.1		TOA subtotal 2	\$/m³	2		yes
	=	Total TOA	\$/m ³	2	S 30.2	
	/	high grade fraction		4	S 31	
30.2		Total TOA	\$/m3	2		yes
	=	TOA subtotal 1	\$/m3	2	S 30.3	
	*	CBCPIF			S 33.3	
30.3		TOA subtotal 1	\$/m³	2		yes
	=	final forest management administration	\$/m ³	2	APP2.1	
	+	total development	\$/m ³	2	APP3.1	
	+	final road management and road use	\$/m ³	2	APP2.2	
	+	total silviculture	\$/m ³	2	Mark/IAM	
31		High Grade Fraction	fraction	4		yes
	=	(1				
	-	LG)	\$/m ³	4	Mark/IAM	yes
32		Return To Forest Management	\$/m³	2		yes
	=	TOA subtotal 2		2	S 30.1	
	*	0.045		3	IAM	

Specifications: The Interior Market Pricing System

33		MLDC subtotal 1	\$/m³	2		yes
	=	MLDC	\$/m ³	2	1.76	
	/	high grade fraction			S 31	
33.1		MLC	\$/m³	2		yes
	=	MLDC subtotal 1	\$/m ³	2	S 33	
	+	MLSO	\$/m ³	2	0.11	
33.2		MLC subtotal 1	\$/m³	2		yes
	=	MLC	\$/m ³	2	S 33.1	
	*	CBCPIF			S 33.3	
33.3		CBCPIF		4		yes
	=	current CPI		1	PAR	
	/	Average CPI (ACPI)		1	158.3	
34		Reserve Stumpage Rate	\$/m³	2		\$/m³
	=	max of: 0.25 or (estimated winning bid			S 27	
	-	final specified operations)			S 28	
35		Real Estimated Winning bid	\$/m³	2		yes
	=	constant contribution			60.68	
	+	real selling price (RSP) contribution			S 2	
	+	cedar (CE) contribution			S 3	
	+	CE DECA Y contribution			S 4	
	+	Hemlock (HE) contribution			S 5	
	+	Balsam (BA) contribution			S 6	
	+	Larch/Yellow Pine (LAYE) contribution			S 7	
	+	cable yarding contribution			S 8	
	+	LOGVOL contribution			S 9	
	+	SB Net DECA Y contribution			S 10	
	+	Fire Damage contribution			S 11	
	+	LOGVPT contribution			S 12	
	+	Cycle Time contribution			S 13	
	+	ZONE 9 contribution			S 14	
	+	CB Net DECID contribution			S 15	
	+	CB contribution			S 16	
	+	GREY contribution			S 17	
	+	DANB contribution			S 18	
	+	PC20 contribution			S 19	
	+	Slope15 contribution			S 20	
	+	Net BLOWDOWN contribution			S 21	
	+	EXCHANGE contribution			S 22	
	+	AAC_DELTA_12MR contribution			S 23	
	+	ISOLATED contribution			S 24	
	+	CAMP contribution			S 25	
	+	OTHER_ATTACK contribution			S 26	

Specifications: The Interior Market Pricing System

APPENDIX 1: EXPLANATION OF VARIABLES USED IN THE AUCTION DATASET BUT NOT IN IMPLEMENTATION

Highway Transportation and 1st and 2nd Quarters --- the average values of these variables have been built into the constant.

Specifications: The Interior Market Pricing System

APPENDIX 2: DECIDUOUS VOLUME AND THE PRORATING OF FOREST MANAGEMENT ADMINISTRATION AND ROAD MANAGEMENT TOAS

		Units	Decimal Places	Source/ Value	Rounding
APP2.1	final forest management admin. (FFMA)	\$/m ³	2		yes
=	forest management admin. (FMA)	\$/m ³		Mark/IAM 4.2.2	
*	HARVOL			S 8.2	
/	CONVOL	m ³		S 2.6	
APP2.2	final road management and road use (FRM)	\$	2		yes
=	final road management	\$/m ³		APP2.2.1	
+	final road use	\$/m ³		APP2.2.2	
APP2.2.1	final road management	\$	2		yes
=	road management (RM)			Mark/IAM4.4.2	
*	HARVOL	m ³		S 8.2	
/	CONVOL	m ³		S 2.6	
APP2.2.2	final road use	\$	2		yes
=	road use (RU)			Mark/IAM4.4.2	
*	HARVOL	m ³		S 8.2	
/	CONVOL	m ³		S 2.6	

Specifications: The Interior Market Pricing System

APPENDIX 3: CALCULATION OF DEVELOPMENT AND SILVICULTURE COST ESTIMATES

The calculation of development cost estimates involves a proration with applicable volume as follows:

		Units	Decimal Places	Source/ Value	Rounding
APP3.1	total development cost	\$/m ³	2		yes
=	total applicable cost	\$		APP3.2	
/	(ADJ_CR_VOL if scale based, or CONVOL if cruise based)	m ³ m ³		APP4.1 S 2.6	
APP3.2	total applicable cost	\$	2		yes
=	sum of applicable type 1 costs and type 2 costs	\$	2	APP3.3	
APP3.3	applicable type1 cost	\$	2		
=	type1 cost	\$	2	Mark/IAM	yes
*	CONVOL	m ³	0	S 2.6	
/	project applicable volume	m ³	0	Mark	yes
APP3.4	type2 cost	\$	2	Mark/IAM	
APP3.5	total silviculture cost	\$/m ³	2		Yes
=	total silviculture dollars	\$	2	Mark/IAM	
/	(ADJ_CR_VOL if scale based, or HARVOL if cruise based)	m ³ m ³		APP4.1 S 8.2	

Note: Type 1 costs are tabular roads and tabular culverts and ECE's. Type 2 costs are cattle guards, pipeline crossings and fencing (items without a project applicable cost).

Specifications: The Interior Market Pricing System

APPENDIX 4: CALCULATION OF ADJUSTED CRUISE VOLUME DENOMINATOR FOR DEVELOPMENT AND SILVICULTURE COST ESTIMATES

	Units	Decimal Places	Source/ Value	Rounding
APP4.1 ADJ_CR_VOL	m ³			No
If selling price zone =5 then:			Mark/IAM	
ADJ_CR_VOL	m ³			
= balsam cruise volume * 0.824	m ³		Mark	No
+ cedar cruise volume * 0.921	m ³		Mark	No
+ fir cruise volume * 1.097	m ³		Mark	No
+ hemlock cruise volume * 0.905	m ³		mark	No
+ larch cruise volume * 0.828	m ³		Mark	No
+ lodgepole pine cruise volume * 0.978	m ³		Mark	No
+ spruce cruise volume * 0.935	m ³		Mark	No
+ white pine cruise volume * 0.410	m ³		Mark	No
+ yellow pine cruise volume * 0.719	m ³		Mark	No
If selling price zone =6 then:		\$	Mark/IAM	
ADJ_CR_VOL	m ³			
= balsam cruise volume * 0.801	m ³		Mark	No
+ cedar cruise volume * 1.122	m ³		Mark	No
+ fir cruise volume * 0.996	m ³		Mark	No
+ hemlock cruise volume * 0.913	m ³		mark	No
+ larch cruise volume * 0.816	m ³		Mark	No
+ lodgepole pine cruise volume * 0.701	m ³		Mark	No
+ spruce cruise volume * 0.990	m ³		Mark	No
+ white pine cruise volume * 0.398	m ³		Mark	No
+ yellow pine cruise volume * 0.707	m ³		Mark	No
If selling price zone =7 then:		\$	Mark/IAM	
ADJ_CR_VOL	m ³			
= balsam cruise volume * 0.818	m ³		Mark	No
+ cedar cruise volume * 0.912	m ³		Mark	No
+ fir cruise volume * 1.011	m ³		Mark	No
+ hemlock cruise volume * 0.915	m ³		mark	No
+ larch cruise volume * 0.835	m ³		Mark	No
+ lodgepole pine cruise volume * 0.825	m ³		Mark	No
+ spruce cruise volume * 0.985	m ³		Mark	No
+ white pine cruise volume * 0.420	m ³		Mark	No
+ yellow pine cruise volume * 0.726	m ³		Mark	No

Specifications: The Interior Market Pricing System

Section APP4.1 continued:

If selling price zone =8 then:	\$	Mark/IAM	
ADJ_CR_VOL	m ³		
= balsam cruise volume * 0.877	m ³	Mark	No
+ cedar cruise volume * 0.951	m ³	Mark	No
+ fir cruise volume * 1.048	m ³	Mark	No
+ hemlock cruise volume * 0.935	m ³	mark	No
+ larch cruise volume * 0.858	m ³	Mark	No
+ lodgepole pine cruise volume * 0.642	m ³	Mark	No
+ spruce cruise volume * 1.029	m ³	Mark	No
+ white pine cruise volume * 0.440	m ³	Mark	No
+ yellow pine cruise volume * 0.749	m ³	Mark	No
If selling price zone =9 then:	\$	Mark/IAM	
ADJ_CR_VOL	m ³		
= balsam cruise volume * 0.814	m ³	Mark	No
+ cedar cruise volume * 0.914	m ³	Mark	No
+ fir cruise volume * 1.001	m ³	Mark	No
+ hemlock cruise volume *0.898	m ³	mark	No
+ larch cruise volume * 0.821	m ³	Mark	No
+ lodgepole pine cruise volume * 0.828	m ³	Mark	No
+ spruce cruise volume * 0.960	m ³	Mark	No
+ white pine cruise volume * 0.403	m ³	Mark	No
+ yellow pine cruise volume * 0.712	m ³	Mark	No