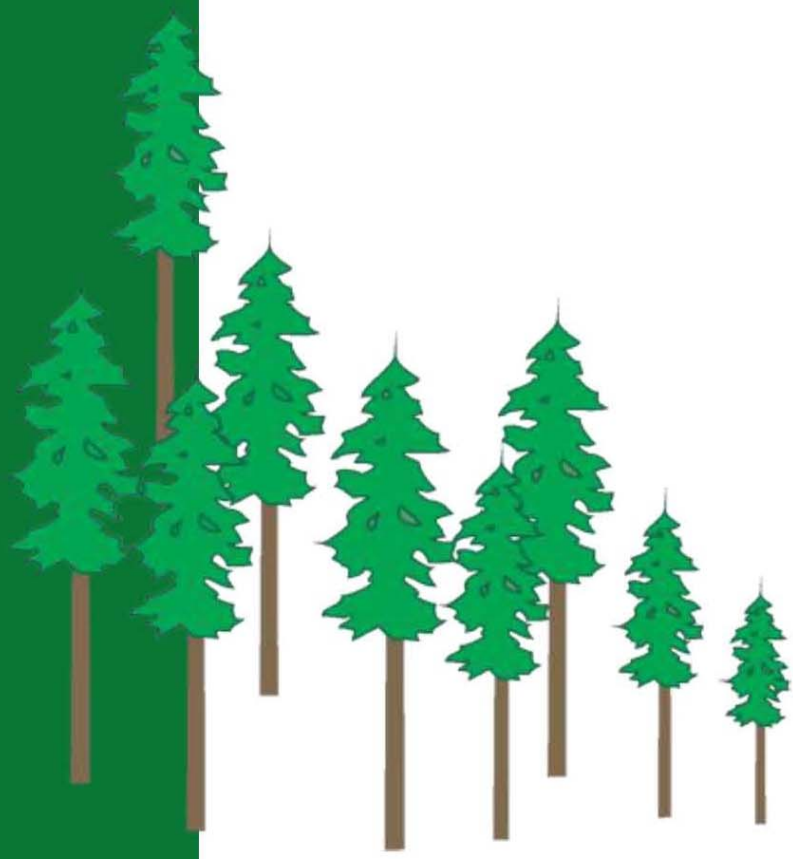
BRITISH COLUMBIA

2014 Specifications: The Interior Market Pricing System



July 1, 2014

Timber Pricing Branch

Specifications: The Interior Market Pricing System

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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	=	3 month average market values and other parameters published quarterly.
IAM	=	*Interior Appraisal Manual*.
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 *Interior Appraisal Manual*.
APP X	=	refers to an appendix of this document.
S X.X.X	=	refers to steps described in this document.

2 CALCULATING THE MPS STUMPAGE RATE

		Units	Decimal Places	Source/ Value	Rounding
2.1	selling price	$/m^3	2		yes
=	stand value			S 2.1.2	
/	CONVOL			S 2.1.1	
2.1.1	CONVOL	m^3	0		
=	sum of coniferous species cruise volumes	m^3		Mark	
2.1.2	stand value	$	2		
=	sum of species values	$		S 2.1.3	
2.1.3	species value	$	2		
=	species selling price	$/m^3		S 2.1.4	
*	species cruise volume	m^3	0	Mark	
2.1.4	species selling price	$/m^3	2		
=	species appraisal LRF	fbm/m^3		S 2.1.5	
*	species lumber AMV	$/fbm		S 2.1.6	
2.1.5	species appraisal LRF	fbm/m³	0		
=	species cruise LRF[1]	fbm/m³	0	Mark	
+	species LRF add-on	fbm/m³	0	IAM	
2.1.6	species lumber AMV (fbm)	$/fbm	3		
=	species lumber AMV (Mbm)	$/Mbm	0	PAR	
/	1000				
2.2	layp fraction	fraction	4		yes
=	layp volume	m³	0	S 2.2.1	
/	CONVOL			S 2.1.1	
2.2.1	layp volume	m³	0		
=	larch cruise volume	m³	0	Mark	
+	yellow pine cruise volume	m³	0	Mark	
2.3	LOGCVPH		4		yes
=	natural logarithm of CVPH			S 2.3.1	
2.3.1	CVPH	m^3/ha			no
=	CONVOL			S 2.1.1	
/	net merchantable area	ha	1	Mark	
2.4	hembal fraction	fraction	4		yes
=	hembal volume	m³	0	S 2.4.1	
/	CONVOL			S 2.1.1	

[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

		Units	Decimal Places	Source/ Value	Rounding
2.4.1	hembal volume	m^3	0		
=	hemlock cruise volume	m^3	0	Mark	
+	balsam cruise volume	m^3	0	Mark	
2.5	final cedar fraction	fraction	4		yes
=	intermediate cedar fraction	fraction		S 2.5.2	
*	(1 - Zone6)			S 2.5.1	
2.5.1	Zone6				
=	1 if Zone 6, 0 otherwise		0	Mark	
2.5.2	intermediate cedar fraction	fraction	4		yes
=	preliminary cedar fraction	fraction		S 2.5.3	
*	(1 – cedar decay/100)	fraction	2	Mark	yes
2.5.3	preliminary cedar fraction	fraction	4		yes
=	cedar cruise volume	m^3	0	Mark	
/	CONVOL			S 2.1.1	
2.6	dry firyp fraction	fraction	4		Yes
=	firyp fraction			S 2.6.1	
*	dry fraction			S 2.6.2	
2.6.1	firyp fraction	fraction	4		yes
=	firyp volume	m^3	0	S 2.6.3	
/	CONVOL			S 2.1.1	
2.6.2	dry fraction		2		
=	fraction of top 2 BEC zone/subzone/variant that is dry	fraction	2	Mark/IAM3.3	yes
2.6.3	firyp volume	m^3	0		
=	Douglas fir cruise volume	m^3	0	Mark	
+	yellow pine volume	m^3	0	Mark	
2.7	LOGVOL		4		yes
=	natural logarithm (EFFVOL/1000)			S 2.7.1	
2.7.1	EFFVOL		0		yes
=	Effective coniferous volume			IAM3.3	
2.8	LOGVPT		4		yes
=	natural logarithm (VPT)		2	Mark	
2.10	decay fraction	fraction	4		yes
=	sum of species decay percent prorates	%		S 2.10.1	
/	100				
2.10.1	species decay percent prorate	%	0		
=	species decay percent	%	0	Mark	
*	species cruise volume		0	Mark	
/	CONVOL			S 2.1.1	

		Units	Decimal Places	Source/ Value	Rounding
2.12	partial cut fraction	fraction	4		
=	1		4		yes
-	(CAPCUT% (no 80% limit)/100)		4	Mark/IAM	
2.13	cable yarding fraction	fraction	4		yes
=	cable yarding volume	m^3	0	Mark/IAM3.3	
/	HARVOL			S 2.13.1	
2.13.1	HARVOL	m3	0		yes
=	sum of all harvest method volumes		0	Mark	
2.16	fire damage fraction	fraction	4		yes
=	sum of fire damage fraction prorates	%		S 2.16.1	
2.16.1	species fire damage fraction prorate	%	0		
=	species fire damage percent	%	0	Mark	
*	species cruise volume	m^3	0	Mark	
/	CONVOL			S 2.1.1	
/	100				
2.17	effective cycle time	hours	1		
=	cycle time	hours	1	S 2.17.1	yes
+	incremental cycle time	hours	1	S 2.17.2	yes
2.17.1	cycle time	hours	1		yes
=	primary cycle time	hours	1	Mark	
+	secondary cycle time	hours	1	Mark	
2.17.2	incremental cycle time				
=	0.5*(cycle time - 6)	hours	1	S 2.17.1	
	note:				
	If cycle time < 6, then incremental cycle time = 0				
2.18	deciduous fraction	fraction	4		yes
=	deciduous volume	m^3	0	Mark	yes
/	HARVOL	m^3	0	S 2.13.1	yes
2.20	Fort Nelson Peace				
=	1 if Zone 9, 0 otherwise		0	Mark	
2.21	2013 Auctions		0		
=	1 for all marks			1	
2.22	DANB		1		
=	DANB (by proxy district as per IAM)			IAM P 3-7	
2.23	CPIF	ratio	4		yes
=	current CPI		1	PAR	
/	base CPI			109.3	

		Units	Decimal Places	Source/ Value	Rounding
2.24	highway transportation		0		
=	1 if highway transportation 0 if off-highway transportation		0	Mark	
2.25	grey attack fraction	fraction	4		yes
=	lodgepole pine grey attack volume	m^3	0	Mark	
/	CONVOL			S 2.1.1	
2.25.1	lag				
=	0 if mark is in zone 5, zone 6 or Cariboo-Chilcotin District, 2 otherwise.				
2.26	cruise based indicator		0		
=	1 if cruise based, 0 otherwise		0	Mark	
2.27	RG35		0		
=	1 if RG35 fraction is greater than or equal to 0.35, 0 otherwise		0	S 2.27.1	
2.27.1	RG35 fraction				no
=	RG volume	m^3	0	S 2.27.2	
/	CONVOL			S 2.1.1	
2.27.2	RG volume	m^3	0		
=	MPB red attack volume	m^3	0	Mark	
+	MPB grey attack volume	m^3	0	Mark	

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		Units	Decimal Places	Source/ Value	Rounding
3.1	real selling price contribution	$/m³	2		yes
=	real selling price	$/m³		S 3.1.1	
*	selling price coefficient			0.2155	
3.1.1	real selling price		4		Yes
=	selling price	$/m³		S 2.1	
/	CPIF	$/m³		S 2.23	
3.2	layp contribution	$/m³	2		yes
=	layp fraction			S 2.2	
*	layp fraction coefficient			-10.60	
3.3	LOGCVPH contribution	$/m³	2		yes
=	LOGCVPH			S 2.3	
*	LOGCVPH coefficient			0.8748	
3.4	hembal contribution	$/m³	2		yes
=	hembal fraction			S 2.4	
*	hembal fraction coefficient			-10.62	
3.5	cedar contribution	$/m³	2		yes
=	final cedar fraction			S 2.5	
*	cedar fraction coefficient			23.74	
3.6	dry firyp contribution	$/m³	2		yes
=	dry firyp fraction			S 2.6	
*	dry firyp fraction coefficient			-3.698	
3.7	LOGVOL contribution	$/m³	2		yes
=	LOGVOL			S 2.7	
*	LOGVOL coefficient			1.318	
3.8	LOGVPT contribution	$/m³	2		yes
=	LOGVPT			S 2.8	
*	LOGVPT coefficient			5.478	
3.10	decay contribution	$/m³	2		yes
=	decay fraction			S 2.10	
*	decay fraction coefficient			-19.70	
3.11	slope contribution	$/m³	2		yes
=	slope	%	0	Mark	
*	slope coefficient			-0.03651	
3.12	partial cut contribution	$/m³	2		yes
=	partial cut fraction			S 2.12	
*	partial cut coefficient			-4.773	

		Units	Decimal Places	Source/ Value	Rounding
3.13	cable yarding contribution	$/m³	2		yes
=	cable yarding fraction			S 2.13	
*	cable yarding fraction coefficient			-16.11	
3.16	fire damage contribution	$/m³	2		yes
=	fire damage fraction			S 2.16	
*	fire damage fraction coefficient			-12.09	
3.17	cycle time contribution	$/m³	2		yes
=	effective cycle time			S 2.17	
*	cycle time coefficient			-1.266	
3.18	deciduous fraction contribution	$/m³	2		yes
=	deciduous fraction			S 2.18	
*	deciduous fraction coefficient			-8.598	
3.20	Fort Nelson Peace contribution	$/m³	2		yes
=	Fort Nelson Peace			S 2.20	
*	Fort Nelson Peace coefficient			-5.253	
3.21	2013 auctions contribution	$/m³	2		yes
=	2013 auctions			S 2.21	
*	2013 auctions coefficient			5.193	
3.22	DANB contribution	$/m³	2		yes
=	DANB			S 2.22	
*	DANB coefficient			0.8612	
3.24	highway transportation contribution	$/m³	2		yes
=	highway transportation	$/m³		S 2.24	
*	highway transportation coefficient			0.4021	
3.25	grey attack contribution	$/m³	2		yes
=	grey attack fraction			S 2.25	
*	(2013 - 2008 - lag)			S 2.25.1	
*	cruise based indicator			S 2.26	
*	rg35			S 2.27	
*	grey attack coefficient			-1.259	
3.26	cruise based contribution	$/m³	2		yes
=	cruise based indicator			S 2.26	
*	cruise based coefficient			S 3.26.1	
3.26.1	cruise based coefficient	$/m³	2		yes
=	-4.566*(1-rg35) – 4.669*rg35			S 2.27	

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		Units	Decimal Places	Source/ Value	Rounding
4.1	real estimated winning bid	$/m³	2		yes
=	constant contribution			6.143	
+	selling price contribution			S 3.1	
+	layp fraction contribution			S3.2	
+	LOGCVPH contribution			S 3.3	
+	hembal contribution			S 3.4	
+	cedar contribution			S 3.5	
+	dry firyp contribution			S 3.6	
+	LOGVOL contribution			S 3.7	
+	LOGVPT contribution			S 3.8	
+	decay contribution			S 3.10	
+	slope contribution			S 3.11	
+	partial cut contribution			S 3.12	
+	cable yarding contribution			S 3.13	
+	fire damage contribution			S 3.16	
+	cycle time contribution			S 3.17	
+	deciduous fraction contribution			S 3.18	
+	Fort Nelson Peace contribution			S 3.20	
+	2013 auctions contribution			S 3.21	
+	DANB contribution			S 3.22	
+	highway transportation contribution			S 3.24	
+	grey attack contribution			S 3.25	
+	cruise based contribution			S 3.26	
4.2	estimated winning bid	$/m³	2		yes
=	maximum of: 0.25 or				
	real estimated winning bid	$/m³		S 4.1	
*	CPIF			S 2.23	
4.3	final specified operations		2		yes
=	specified operations			S 4.3.1	
*	CBCPIF			S 5.2	
4.3.1	specified operations	$/m³	2		yes
=	water transportation	$/m³	2	Mark/IAM	
+	special transportation systems	$/m³	2	Mark/IAM	
+	camp costs	$/m³	2	Mark/IAM	
+	skyline	$/m³	2	Mark/IAM	
+	heli logging	$/m³	2	Mark/IAM	
+	horse logging	$/m³	2	Mark/IAM	
+	high development cost (BCTS only)	$/m³	2	Mark/IAM	
4.4	final estimated winning bid				
=	maximum of: 0.25 or				
	(estimated winning bid			S 4.2	
-	final specified operations)			S 4.3	

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		Units	Decimal Places	Source/ Value	Rounding
5.1	final TOA	$/m³	2		yes
=	TOA subtotal 2		2	S 5.1.1	
+	return to forest management		2	S 5.1.5	
-	MLRC subtotal 1		2	S 5.1.8	
5.1.1	TOA subtotal 2	$/m³	2		yes
=	total TOA	$/m³	2	S 5.1.2	
/	high grade fraction		4	S 5.1.4	
5.1.2	total TOA	$/m^3	2		yes
=	TOA subtotal 1	$/m^3	2	S 5.1.3	
*	CBCPIF			S 5.2	
5.1.3	TOA subtotal 1	$/m³	2		yes
=	final forest management administration	$/m³	2	APP2.1	
+	total development	$/m³	2	APP3.1	
+	final road management and road use	$/m³	2	APP2.2	
+	total silviculture	$/m³	2	Mark/IAM	
5.1.4	high grade fraction	fraction	4		yes
=	(1				
-	LG)	$/m³	4	Mark/IAM	yes
5.1.5	return to forest management	$/m³	2		yes
=	TOA subtotal 2		2	S 5.1.1	
*	0.022		3	IAM	
5.1.6	MLRC subtotal 1	$/m³	2		yes
=	MLRC	$/m³	2	1.17	
/	high grade fraction			S 5.1.4	
5.1.7	MLC	$/m³	2		yes
=	MLRC subtotal 1	$/m³	2	S 5.1.6	
+	MLSO	$/m³	2	0.06	
5.1.8	MLC subtotal 1	$/m³	2		yes
=	MLC	$/m³	2	S 5.1.7	
*	CBCPIF			S 5.2	
5.2	CBCPIF		4		yes
=	current CPI		1	PAR	
/	cost base average CPI		1	138.1	
6.1	Reserve Stumpage Rate	$/m³	2		yes
=	maximum of: 0.25 or				
	final estimated winning bid			S 4.4	
-	final TOA			S 5.1	

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

CABLE*(D2009+D2010) --- the regression included 2 cable yarding variables, one for 2009 and 20010 and one for the later years. Only the one including 2013 is applied.

2010, 2011 and 2012 Annual Dummy Variables --- 1 if the sale was sold during these years, zero otherwise --- These variables do not apply in implementation because MPS applies the dummy variable from the latest year (2013) to all permits.

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/IAM4.2.1	
*	HARVOL			S 2.13.1	
/	CONVOL	m^3		S 2.1.1	
APP2.2	final road management and road use (FRM)	$	2		yes
=	final road management	$/m^3		APP2.2.1	
+	final road use	$/m^3		APP 2.2.2	
APP2.2.1	final road management	$	2		yes
=	road management (RM)			Mark/IAM4.4.2	
*	HARVOL	m^3		S 2.13.1	
/	CONVOL	m^3		S 2.1.1	
APP2.2.2	final road use	$	2		yes
=	road use (RU)			Mark/IAM4.4.2	
*	HARVOL	m^3		S 2.13.1	
/	CONVOL	m^3		S 2.1.1	

APPENDIX 3: APPLICABLE VOLUME AND THE CALCULATION OF DEVELOPMENT 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	
/	CONVOL	m^3		S 2.1.1	
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 2.1.1	
/	project applicable volume	m^3	0	Mark	yes
APP3.4	type2 cost	$/m^3	2	Mark/IAM	

Note: Type 1 costs are tabular roads and tabular culverts. Type 2 costs are ECE's, cattle guards, pipeline crossings and fencing.