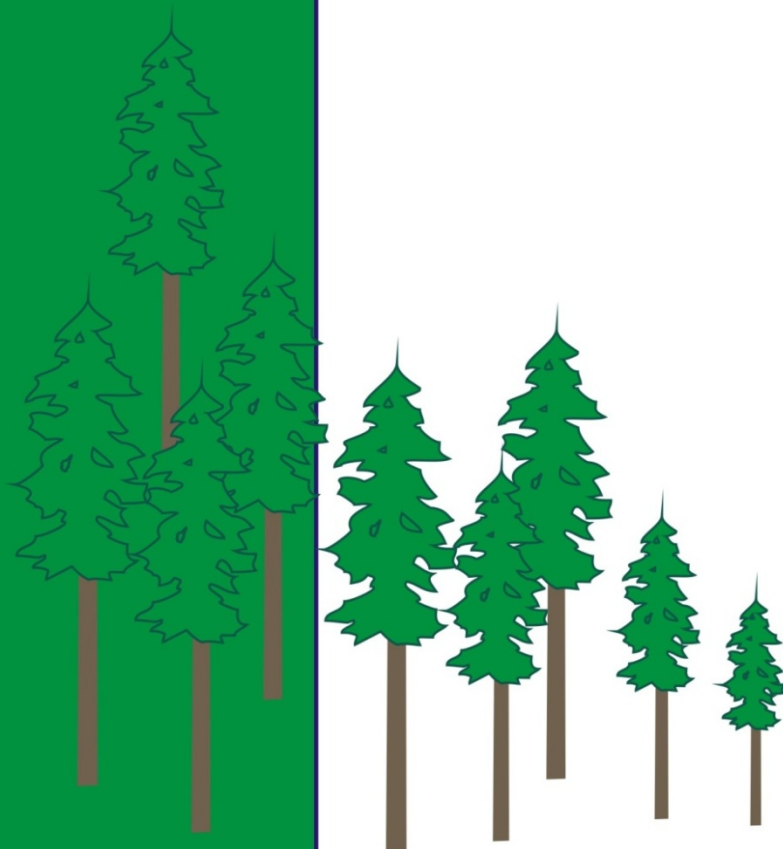




Specifications:

The Interior Market Pricing System



July 1, 2012

Timber Pricing
Branch

Specifications: The Interior Market Pricing System

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Disclaimer:

This document is intended to complement the IAM by providing additional technical details such as rounding conventions. If there are any inconsistencies found between this document and the IAM then the IAM 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	=	<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.

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2. CALCULATING THE MPS STUMPAGE RATE

		Units	Decimal Places	Source/ Value	Rounding
2.1	selling price index	$\$/m^3$	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/ m^3	0		
=	species cruise LRF ¹	fbm/ m^3	0	Mark	
+	species LRF add-on	fbm/ m^3	0	IAM	
2.1.6	species lumber AMV (fbm)	\$/fbm	3		
=	species lumber AMV (Mbm)	\$/Mbm	0	PAR	
/	1000				
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	m^3	0	S 2.4.1	
/	CONVOL			S 2.1.1	
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	

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

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		Units	Decimal Places	Source/ Value	Rounding
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 fir fraction	fraction	4		Yes
=	fir fraction			S 2.6.1	
*	dry fraction			S 2.6.2	
2.6.1	fir fraction	fraction	4		yes
=	Douglas fir cruise volume	m ³	0	Mark	
/	CONVOL			S 2.1.1	
2.6.2	dry fraction				
=	fraction of top 2 BEC zone/subzone/variant that is dry	fraction	2	Mark/IAM3.3	yes
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	
2.12	partial cut fraction	fraction			
=	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	m ³	0		yes
=	sum of all harvest method volumes		0	Mark	
2.14	heli fraction	fraction	4		yes
=	helicopter yarding volume	m ³	0	Mark/IAM3.3	
/	HARVOL			S 2.13.1	

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		Units	Decimal Places	Source/ Value	Rounding
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	total cycle time	hours	1		
=	primary cycle time	hours	1	Mark	yes
+	secondary cycle time	hours	1	Mark	yes
2.18	competitive deciduous fraction		4		yes
=	competitive deciduous			S 2.18.1	
*	deciduous fraction			S 2.18.2	
2.18.1	competitive deciduous				
=	1 if sold under IAM section 5.1.1(5)			Mark	
	0 otherwise				
2.18.2	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	2011 Auctions				
=	1 for all marks			1	
2.22	DANB		1		
=	DANB (by district as per IAM)			IAM P 3-7	
2.23	CPIF	ratio	4		yes
=	current CPI		1	PAR	
/	base CPI			109.3	
2.24	highway transportation				
=	1 if highway transportation		0	Mark	
	0 if off-highway transportation				
2.25	other pest attack fraction	fraction	4		yes
=	other pest attack volume	m ³	0	Mark	
/	CONVOL			S 2.1.1	
2.26	cruise based indicator				
=	1 if cruise based, 0 otherwise		0	Mark	

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		Units	Decimal Places	Source/ Value	Rounding
3.1	selling price contribution	\$/m ³	2		yes
=	selling price index	\$/m ³		S 2.1	
*	selling price coefficient			0.157	
/	CPIF	\$/m ³		S 2.23	
3.2	exchange rate contribution	\$/m ³	2		yes
=	exchange rate			PAR	
*	exchange rate coefficient			-11.01	
3.3	LOGCVPH contribution	\$/m ³	2		yes
=	LOGCVPH			S 2.3	
*	LOGCVPH coefficient			1.76	
3.4	hembal contribution	\$/m ³	2		yes
=	hembal fraction			S 2.4	
*	hembal fraction coefficient			-11.92	
3.5	cedar contribution	\$/m ³	2		yes
=	final cedar fraction			S 2.5	
*	cedar fraction coefficient			37.39	
3.6	dry fir contribution	\$/m ³	2		yes
=	dry fir fraction			S 2.6	
*	dry fir fraction coefficient			-9.20	
3.7	LOGVOL contribution	\$/m ³	2		yes
=	LOGVOL			S 2.7	
*	LOGVOL coefficient			1.12	
3.8	LOGVPT contribution	\$/m ³	2		yes
=	LOGVPT			S 2.8	
*	LOGVPT coefficient			6.03	
3.10	decay contribution	\$/m ³	2		yes
=	decay fraction			S 2.10	
*	decay fraction coefficient			-16.70	
3.11	slope contribution	\$/m ³	2		yes
=	slope	%	0	Mark	
*	slope coefficient			-0.0376	
3.12	partial cut contribution	\$/m ³	2		yes
=	partial cut fraction			S 2.12	
*	partial cut coefficient			-3.35	

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		Units	Decimal Places	Source/ Value	Rounding
3.13	cable yarding contribution	\$/m ³	2		yes
=	cable yarding fraction			S 2.13	
*	cable yarding fraction coefficient			-8.32	
3.14	heli contribution	\$/m ³	2		yes
=	heli fraction			S 2.14	
*	heli fraction coefficient			-62.79	
3.16	fire damage contribution	\$/m ³	2		yes
=	fire damage fraction			S 2.16	
*	fire damage fraction coefficient			-12.56	
3.17	cycle time contribution	\$/m ³	2		yes
=	total cycle time			S 2.17	
*	cycle time coefficient			-1.39	
3.18	competitive deciduous fraction contribution	\$/m ³	2		yes
=	competitive deciduous fraction			S 2.18	
*	competitive deciduous fraction coefficient			-8.59	
3.20	Fort Nelson Peace contribution	\$/m ³	2		yes
=	Fort Nelson Peace			S 2.20	
*	Fort Nelson Peace coefficient			-5.60	
3.21	2011 auctions contribution	\$/m ³	2		yes
=	2011 auctions			S 2.21	
*	2011 auctions coefficient			-4.07	
3.22	DANB contribution	\$/m ³	2		yes
=	DANB			S 2.22	
*	DANB coefficient			1.046	
3.24	highway transportation contribution	\$/m ³	2		yes
=	highway transportation	\$/m ³		S 2.24	
*	highway transportation coefficient			0.494	
3.25	other pest attack contribution	\$/m ³	2		yes
=	other pest attack fraction			S 2.25	
*	(1 - cruise based indicator)			S 2.26	
*	other pest attack coefficient			-5.83	
3.26	cruise based contribution	\$/m ³	2		yes
=	cruise based indicator			S 2.26	
*	cruise based coefficient			-5.42	

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		Units	Decimal Places	Source/ Value	Rounding
4.1	real estimated winning bid	\$/m ³	2		yes
=	constant			22.23	
+	selling price contribution			S 3.1	
+	exchange rate contribution			S 3.2	
+	LOGCVPH			S 3.3	
+	hembal contribution			S 3.4	
+	cedar contribution			S 3.5	
+	dry fir contribution			S 3.6	
+	LOGVOL contribution			S 3.7	
+	LOGVPT variable 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	
+	heli contribution			S 3.14	
+	fire damage contribution			S 3.16	
+	cycle time contribution			S 3.17	
+	competitive deciduous fraction contribution			S 3.18	
+	Fort Nelson Peace contribution			S 3.20	
+	2011 auctions contribution			S 3.21	
+	DANB contribution			S 3.22	
+	highway transportation contribution			S 3.24	
+	other pest attack contribution			S 3.25	
+	cruise based contribution			S 3.26	
4.2	estimated winning bid	\$/m ³	2		yes
=	maximum of: 0.25 or				
	real estimated winning bid	\$/m ³		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	\$/m ³	2		yes
=	water transportation	\$/m ³	2	Mark/IAM	
+	special transportation systems	\$/m ³	2	Mark/IAM	
+	camp costs	\$/m ³	2	Mark/IAM	
+	skyline	\$/m ³	2	Mark/IAM	
+	horse logging	\$/m ³	2	Mark IAM	
+	high development cost (BCTS only)	\$/m ³	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	\$/m ³	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	\$/m ³	2		yes
=	total TOA	\$/m ³	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	\$/m ³	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	
5.1.4	high grade fraction	fraction	4		yes
=	(1				
-	LG)	\$/m ³	4	Mark/IAM	yes
5.1.5	return to forest management	\$/m ³	2		yes
=	TOA subtotal 2		2	S 5.1.1	
*	0.031		3	IAM	
5.1.6	MLRC subtotal 1	\$/m ³	2		yes
=	MLRC	\$/m ³	2	1.29	
/	high grade fraction			S 5.1.4	
5.1.7	MLC	\$/m ³	2		yes
=	MLRC subtotal 1	\$/m ³	2	S 5.1.6	
+	MLSO	\$/m ³	2	0.08	
5.1.8	MLC subtotal 1	\$/m ³	2		yes
=	MLC	\$/m ³	2	S 5.1.7	
*	CBCPIF			S 5.2	
5.2	CBCPIF		4		yes
=	current CPI		1	PAR	
/	cost base average CPI		1	133.3	
6.1	Reserve Stumpage Rate	\$/m ³	2		yes
=	maximum of: 0.25 or				
	final estimated winning bid			S 4.4	
-	final TOA			S 5.1	

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APPENDIX 1

Specifications: The Interior Market Pricing System

EXPLANATION OF VARIABLES USED IN THE AUCTION DATASET BUT NOT IN IMPLEMENTATION

Red and grey mountain pine beetle attack --- the regression included this variable only for 2007 and 2008. The variable did not hold for 2009, 2010 and 2011 (during which time heavy MPB attacked sales were sold as lumpsum) so it is not applied going forward.

2008, 2009 and 2010 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 (2011) to all permits.

First and Second Quarter Auctions --- 1 if auction sold during the first or second quarter, zero otherwise --- This variable does apply but the average value of the variable from the auction dataset is applied in all cases and this constant value is added into the constant from the regressions, and therefore no longer appears explicitly in the equation.

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APPENDIX 2

Specifications: The Interior Market Pricing System

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	

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APPENDIX 3

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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 project costs	\$		APP3.3	
APP3.3	applicable project cost	\$	2		
=	project cost	\$	2	Mark/IAM	yes
*	CONVOL	m ³	0	S 2.1.1	
/	project applicable volume	m ³	0	Mark	yes