



COAST MARKET PRICING SYSTEM

Update – 2024



January 1, 2024

Timber Pricing
Branch

1. INTRODUCTION

The purpose of this paper is to provide an overview of the annual January 1, 2024 update to the Coast Market Pricing System (MPS).¹

2. AUCTION DATASET

The auction dataset used in the update contains winning bids and data from 888 sales over the 17-year period July 1, 2006 through June 30, 2023.

3. FINAL ESTIMATED WINNING BID EQUATIONS

There were two important changes in the 2024 Coast MPS Update. First, TPB has stopped modelling two separate equations, that is the Winning Bid equation (WB) and the Number of Bidders (NB) equation, followed by an algebraic method to produce one final combined equation. Instead, only the WB equation is modeled, and the NB coefficient is applied to the district average number of bidders. The second change involved moving the lumber prices used in modelling and application from a 3-month moving average to a 2-month moving average.

¹ This paper is not intended to provide the basis for calculating stumpage rates nor should it be used as guidance for interpreting the legal policies and procedures for calculating stumpage rates, which are contained in the *Coast Appraisal Manual (CAM)*. The *Coast Appraisal Manual* contains the policies and procedures referred to in Section 105 of the *Forest Act*.

3. ESTIMATED WINNING BID REGRESSIONS

3.1 2024 Winning Bid – Loss Factor Cruise

For cutting permits where the cruise data comes from a standard “Loss Factor” cruise.

Explanatory Variable	2024 Winning Bid	
	Coefficient	t-Statistic
Constant	-17.0716	-3.2909
Number of Bidders	4.5637	16.6100
Cedar Lumber High Grade	0.1953	16.6100
Cedar Lumber Mid Grade	0.0922	15.9937
Fir Lumber High and Mid Grade	0.3953	17.2256
Hembal Lumber High Grade	0.0399	2.8933
Hembal Lumber Mid Grade	0.0315	4.4751
Cypress Lumber High and Mid Grade	0.1487	5.8631
Old Growth LN (Volume per Log)	12.7964	3.3294
LN (Volume per Hectare/1000)	20.6722	7.1109
Conventional Slope * (1-Heli Share)	-0.3175	-6.3041
Heli Land Drop	-51.4418	-12.9424
Heli Water Drop	-49.9658	-9.4972
Location	-0.1057	-6.5722
Isolated	-11.7044	-6.3940
Lumpsum	-2.8938	-1.7248
North American and Japanese Housing Starts	0.013441	6.0846
Harvest Volume	1.2912	4.0164
Number of Observations	888	
Adjusted R²	0.773	

Note: LN means natural logarithm

3.2 2024 Winning Bid – Call Grade Net Factor Cruise

There is a second set of EWB regressions (and a second EWB equation in the CAM) for appraisals where the cruise data is derived from an alternative cruising method known as “Call Grade Net Factor”. In these regressions, the BCTS auction data also derives from Call Grade Net Factor cruises. This method is used for non-BCTS cruise based cutting permits.

Explanatory Variable	2024 Winning Bid	
	Coefficient	t-Statistic
Constant	-2.7098	-0.4240
Number of Bidders	4.6189	14.0225
Cedar Lumber High Grade	0.1555	15.0667
Cedar Lumber Mid Grade	0.0635	9.1383
Fir Lumber High and Mid Grade	0.2798	13.5567
Cypress Lumber High and Mid Grade	0.0898	4.3418
Old Growth LN (Volume per Log)	18.6401	4.3478
LN (Volume per Hectare/1000)	27.2944	8.1341
Conventional Slope	-0.4113	-7.0458
Heli Land Drop	-57.7004	-12.0177
Heli Water Drop	-44.7432	-6.6902
Location	-0.1209	-6.3555
Isolated	-8.0942	-3.7352
Lumpsum	-5.553	-2.9909
North American and Japanese Housing Starts	0.0297	11.2644
Harvest Volume	0.7526	2.0916
Number of Observations	647	
Adjusted R²	0.787	

Note: LN means natural logarithm

4. Specified Operations

The auction dataset used to develop MPS is comprised of 893 auctions. There are some harvesting situations that are not well represented in the auction dataset (for example, inland water transportation) and therefore, a specified operation cost estimate is used in the calculation of stumpage rates. See Appendix 2 for definitions of each specified operation.

The specified operations are shown below.

Specified Operations	January 2024 Update
Skyline Logging (over 600 metres)	Appraised as heli
Inland Water Log Transportation	\$13.25/m ³
Tree Crown Modification	\$36.72/tree (old growth)
	\$16.71/tree (2nd growth)
Barging	\$10.88/m ³ to \$13.86/m ³
Clayoquot Sound Operating Costs	\$12.21/m ³
Ecosystem Based Management	\$14.29/m ³
Haul Distance Above 100km	\$0.16/m ³ per km beyond 100km
High Development Cost (only applies to BCTS upset rates)	See Section 4.4.6 of the Coast Appraisal Manual

5. TENURE OBLIGATION ADJUSTMENTS

As outlined in the Coast Tenure Obligations Adjustment paper (dated July 1, 2012), the adjustments are based on cost surveys.

The tenure obligation adjustments are shown below.

Tenure Obligations	December 2024 Update
Forest Planning & Administration Cost	\$15.86/m3
Low Volume Cost	\$10.21/m3
Road Development Cost	See Section 5.3 of CAM
Road Management Cost	\$3.25/m3
Road Use Charges	Approved actuals
Basic Silviculture Cost	See Section 5.7 of CAM.
BCTS Infrastructure	\$0.34/m3
Low Grade Adjustment	See Section 5.8 of CAM
Return to Forest Management	1.091

6. SUMMARY

The new final equation, specified operations and tenure obligation adjustments will be used to calculate stumpage rates for appraisals on the Coast, starting January 1, 2024.

APPENDIX 1 - COAST MPS DECEMBER 2024 UPDATE FINAL REGRESSIONS

A1. Final Loss Factor Winning Bid

<u>MODEL INFO:</u>					
Observations: 888					
Dependent Variable: RWB_177.27					
Type: OLS linear regression					
<u>MODEL FIT:</u>					
$F(17,870) = 178.9095, p = 0.0000$					
$R^2 = 0.7776$					
Adj. $R^2 = 0.7732$					
Standard errors: OLS					
	Est.	S.E.	t val.	p	VIF
(Intercept)	-17.0716	5.1876	-3.2909	0.0010	
NB	4.5637	0.2748	16.6100	0.0000	1.2365
CEDARCE_HGCEDAR_LUMBER_2MR177.27/CPI	0.1953	0.0122	15.9937	0.0000	3.2005
CEDARCE_MGCEDAR_LUMBER_2MR177.27/CPI	0.0922	0.0063	14.7077	0.0000	2.9134
FIR_ALL_GRADES_FIR_VL_HYBRID_2MR*177.27/CPI	0.3953	0.0230	17.2256	0.0000	3.2194
CYPRESS(CY_HG+CY_MG)CYP_LUM_2MR177.27/CPI	0.1487	0.0254	5.8631	0.0000	1.4605
HEMBALHGHEM_2MR177.27/CPI	0.0399	0.0138	2.8933	0.0039	2.6004
HEMBALMGHEM_2MR177.27/CPI	0.0315	0.0070	4.4751	0.0000	2.2595
LOG(VPL)OG_FR	12.7964	3.8434	3.3294	0.0009	1.7077
LOG(VPH/1000)	20.6722	2.9071	7.1109	0.0000	1.8383
SLOPE(1-HELI)	-0.3175	0.0504	-6.3041	0.0000	1.8672
HELI_LAND	-51.4418	3.9747	-12.9424	0.0000	1.5139
HELI_WATER	-49.9658	5.2611	-9.4972	0.0000	1.3520
LOCATION	-0.1057	0.0161	-6.5722	0.0000	2.2800
ISOLATED	-11.7044	1.8305	-6.3940	0.0000	1.4287
LUMPSUM	-2.8938	1.6778	-1.7248	0.0849	1.2538
NAJ_starts12MR	0.0134	0.0022	6.0846	0.0000	1.8418
HARVEST_12MR_AAC	1.2912	0.3215	4.0164	0.0001	1.4245

A2. Final Call Grade Net Factor Winning Bid

<u>MODEL INFO:</u>					
<i>Observations:</i> 647					
<i>Dependent Variable:</i> RWB_177.27					
<i>Type:</i> OLS linear regression					
<u>MODEL FIT:</u>					
$F(15,631) = 159.7412, p = 0.0000$					
$R^2 = 0.7916$					
$Adj. R^2 = 0.7866$					
<i>Standard errors: OLS</i>					
	Est.	S.E.	t val.	p	VIF
(Intercept)	-2.7098	6.3904	-0.4240	0.6717	
NB	4.6189	0.3294	14.0225	0.0000	1.3277
CEDARCE_HGCEDAR_LUMBER_2MR177.27/CPI	0.1555	0.0103	15.0667	0.0000	3.0251
CEDARCE_MGCEDAR_LUMBER_2MR177.27/CPI	0.0635	0.0070	9.1383	0.0000	2.4941
FIR_ALL_GRADES FIR_VL_HYBRID_2MR*177.27/CPI	0.2798	0.0206	13.5567	0.0000	2.2884
CYPRESS(CY_HG+CY_MG)CYP_LUM_2MR177.27/CPI	0.0898	0.0207	4.3418	0.0000	1.2603
LOG(VPL)OG_FR	18.6401	4.2873	4.3478	0.0000	1.5755
LOG(VPH/1000)	27.2944	3.3556	8.1341	0.0000	1.8227
SLOPE(1-HELI)	-0.4113	0.0584	-7.0458	0.0000	1.8414
HELI_LAND	-57.7004	4.8013	-12.0177	0.0000	1.5577
HELI_WATER	-44.7432	6.6879	-6.6902	0.0000	1.2757
LOCATION	-0.1209	0.0190	-6.3555	0.0000	2.2803
ISOLATED	-8.0942	2.1670	-3.7352	0.0002	1.3826
LUMPSUM	-5.5530	1.8566	-2.9909	0.0029	1.2699
NAJ_starts12MR	0.0297	0.0026	11.2644	0.0000	1.4659
HARVEST_12MR_AAC	0.7526	0.3598	2.0916	0.0369	1.1651

Appendix 2 - Variables and Definitions

Predicted Bid	Used in the Number of Bidders equation: The estimated winning bid for the cutting authority from the corresponding winning bid equation, expressed in $\$/m^3$.
Cedar Lumber High Grade	A composite of cedar lumber prices (C\$/mfbm, net of duties) times the fraction of the coniferous net cruise volume that is cedar and grade D through H.
Cedar Lumber Mid Grade	A composite of cedar lumber prices (C\$/mfbm, net of duties) times the fraction of the coniferous net cruise volume that is cedar and grade U through I.
Fir Lumber High Grade	A composite of fir veneer and lumber prices (C\$/m ³ , net of duties) times the fraction of the coniferous net cruise volume that is fir and grade B through H.
Fir Lumber Mid Grade	A composite of fir veneer and lumber prices (C\$/m ³ , net of duties) times the fraction of the coniferous net cruise volume that is fir and grade U through I.
Hemlock Lumber High Grade	An index of hemlock lumber prices (Stats Can, 2010=100, net of duties) times the fraction of the coniferous net cruise volume that is hemlock or balsam and grade D through H.
Hemlock Lumber Mid Grade	An index of hemlock lumber prices (Stats Can, 2010=100, net of duties) times the fraction of the coniferous net cruise volume that is hemlock or balsam and grade I or J.
Cypress Lumber High and Mid Grade	Average cypress lumber export price (C\$/m ³ , net of duties) times the fraction of the coniferous net cruise volume that is cypress and grade D through U.
Old Growth LN(Volume per Log)	The natural logarithm of the volume per tree times the fraction of the coniferous volume that is old growth.
LN(Volume per Hectare/1000)	The natural logarithm of the coniferous volume per hectare divided by 1000.
Helicopter Land Drop	For land drop only: The fraction of the total net cruise volume, including deciduous volume, of timber in a cutting authority area that must be helicopter yarded or yarded by skyline where logs are fully suspended more than 600 m in a straight line to the centre of the closest possible landing. This is calculated by dividing the total volume of timber that must be helicopter yarded or skyline yarded over 600 m by the total net cruise volume of the cutting authority area. HELILAND is in decimal form, rounded to 2 decimal places.
Helicopter Water Drop	As for “Helicopter Land Drop” but applies to the fraction that is water dropped.

District Average Number of Bidders	The average number of bidders for the forest district the cutting authority area is located within is listed in Table 4-2 of the CAM.
Conventional Slope	The average side slope (%) of the fraction of the cutting permit that is not helicopter yarded.
CPI	The BC Consumer Price Index approved by the director for use on the effective date of the appraisal, reappraisal or quarterly adjustment.
Location	The net cruise volume weighted average straight line distance measured in kilometres between the geographic centre of each part of a cut block and the nearest major centre that is closest to that part of the cutting authority area.
Isolated	Isolated =1, if all parts of the cutting authority area are accessible by air or water only and is not serviced by public ferry service.
North American and Japanese Housing Starts	12-month total of North American and Japanese Housing Starts, as published in the approved stumpage appraisal parameters.
Total Harvest	Rolling 12-month total Coast harvest volume, AAC adjusted, as published in the approved stumpage appraisal parameters.

APPENDIX 3 - MORE DETAIL ON SPECIFIED OPERATIONS

If sufficient auction data is not available, the ministry will, for those identified situations, implement specified operations.

The specified operations will be used to adjust the MPS stumpage rate for the estimated incremental cost of the identified situation. The explicit assumption is that if a bidder was faced with a similar situation, he or she would lower the bid by the extra cost incurred because of the identified situation.

The situations that may be eligible for specified operations adjustment will be determined according to the following principles:

- The expectation that a bid would be influenced by this situation
- Representation (number of samples, if any, in the auction data set)
- Materiality of estimated cost differential (supported by verifiable financial data); and
- Statistical analysis (including the premise that other represented situations and variables in the MPS database and equations may serve as a proxy for the situation in question).

The ministry, after considering the above and any other relevant technical information, may or may not designate the situation as an identified situation eligible for a specified operation and, if eligible, specify the dollars per cubic metre adjustment.

The ultimate objective is to have a representative auction database and hence, few, if any, specified operations adjustments.

The following are identified as specified operations for the Coast MPS.

Cost estimates from the current *Coast Appraisal Manual* are used for a – h below.

a) Skyline Logging

For those areas within a cutblock that:

- Are 600 metres or greater measured in a straight-line horizontal distance from the centre of the closest possible landing or place where a landing may be located; and
- Are yarded by skyline.

b) Inland Water Transportation

- Where logs must be towed on Great Central, Owikeno or Powell Lake or other authorized inland water location.

c) Clayoquot Sound

- Applies where orders under Section 93.4 of the *Land Act* specific to Clayoquot Sound require a higher level of land use planning and/or different harvesting methods.

d) Tree Crown Modification

- To protect the standing trees adjacent a harvested area by trimming tree crowns to reduce sail area and decrease the potential for windthrow damage.

e) Ecosystem Based Management

- Applies where orders under Section 93.4 of the *Land Act* specific to the Great Bear Rainforest and Haida Gwaii require a higher level of land use planning and/or different harvesting methods.

f) Haul Distance Above 100km

- A specified operation cost estimate for permits with haul distances greater than 100km from the cutting authority area to the appraisal log dump.

g) BCTS High Development Cost

- Allows an upset rate reduction for BCTS auction sales with development costs exceeding \$15.46/m³.

h) Barging

- Allows a specified operation of \$10.88/m³ for that part of a cutting authority that is barged rather than towed. The specified operation is \$13.86/m³ if the cutting authority is in Haida Gwaii.