



Estimating the Range of Expected Tongass National Forest Timber Purchase and Sale Offer

Key Message

The Tongass National Forest, in compliance with the 1990 Tongass Timber Reform Act (Public Law 101-626), must seek to provide an annual supply of timber to meet market demand to the extent consistent with providing for multiple use and sustained yield of all renewable forest resources.

Issue

The 1997 Record of Decision for the *Tongass Land and Resource Management Plan* committed the Forest Service to develop procedures to ensure annual timber sale offerings are consistent with implementing the “seek to meet market demand” language of the Tongass Timber Reform Act. In April 2000, the Forest Service published its procedures in *Responding to the Market Demand for Tongass Timber: Using Adaptive Management to Implement Section 101 of the 1990 Tongass Timber Reform Act*¹.

The Forest Service Pacific Northwest Research Station has published several studies that estimate derived demand for timber in Southeast Alaska, most recently, Daniels et al. (2016)². The derived demand projections from Daniels et al. (2016) were incorporated into the Morse Methodology and used to estimate needed Tongass National Forest timber sale offering for fiscal year 2022.

Background

The Morse Methodology is used to estimate annual Tongass National Forest timber sale offerings. The general approach of the Morse Methodology is to consider the timber requirements of Southeast Alaska’s sawmills at different levels of operation and under different assumptions about market conditions and technical processing capacity. The procedures address the uncertainty associated with forecasting market conditions, the continuing transformation of the timber industry and the inability of the Forest Service to respond quickly to market fluctuations due to the time it takes to prepare timber for sale.

The methodology allows for adaptation to current situations. Since the Morse Methodology was developed in 2000, model inputs have been adjusted to reflect new understanding and information, such as share of raw material provided by the Tongass National Forest to local processors, amount of time between timber sale purchase and harvest, and sawmill capacity. Last year, the model was modified by adding fuelwood as an industry use for harvested material, separating spruce and hemlock species information that had previously been combined, and adjusting the time frame for calculations for useable wood into calendar years. For FY22, Model Item H (probability of meeting consumption) was adjusted from 90% to 80% to account for modest timber offerings in FY21.

As indicated in the model, planning the annual timber program requires more than merely economic factors. To account for delays in timber sale preparation, objections, and/or litigation, sufficient contingency volume must be included in the annual timber sale program. Furthermore, budget and organizational constraints limit the extent to which the Forest Service can respond to economic cycles and the associated fluctuations in timber demand. All of these factors must be considered in evaluating the annual market demand for timber and setting annual timber offerings.

The 2022 model results are attached. Historic reports are available at
https://www.fs.usda.gov/detail/r10/landmanagement/resourcemanagement/?cid=fsbdev2_038785.

For More Information

Brie Darr, Director of Natural Resources, Alaska Region
(907) 738-5767
bridget.s.darr@usda.gov

¹ https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd560110.pdf

² Daniels, J.M.; Paruszkiewicz, M.D.; Alexander, S.J. 2016. Tongass National Forest timber demand: projections for 2015 to 2030. Gen. Tech. Rep. PNW-GTR-934. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 53 p. View online at <https://www.fs.usda.gov/treesearch/pubs/50909>



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Predicting Tongass National Forest Timber Purchases and Offer Levels – Fiscal Year 2022

Model Item	Description	Notation	Baseline	Scenario 1 Young Growth Transition	Scenario 2 Wood Energy Growth	Scenario 3 Housing Market Rebound
Demand						
A	Installed and Operable Sawmill Capacity [MMBF, Log Scale]	A	125	125	125	125
B	Industry Rate of Capacity Utilization	B	13%	13%	13%	13%
C	Share of Industry Raw Material Provided by Tongass National Forest	C	56%	56%	56%	56%
D	Percent of Useable Wood in Average Tongass National Forest Timber Sale	D	97%	97%	97%	97%
E	Annual Tongass National Forest Timber Consumption [MMBF, Theoretical]	$E = ((A*B)*C)/D$	9	9	9	9
F	Average Lead Time [Years]	F	1.2	1.2	1.2	1.2
G	Standard Deviation of Lead Time [Years]	G	0.96	0.96	0.96	0.96
H	Probability of Meeting Consumption [One-Tailed Test for 80% at Infinity]	H	0.84	0.84	0.84	0.84
I	Timber Inventory Requirements [MMBF]	$I = (E*G) + ((E*H)*F)$	19	19	19	19
J	Volume Under Contract [MMBF]	J	32	32	32	32
K	Projected Harvest [MMBF], 2022 [per PNW Research Station]	K	46	46	58	47
L	Projected Inventory Shortfall [MMBF]	$L = I - J$	-13	-13	-13	-13
M	Low Range of Expected Timber Purchases [MMBF], FY22	$M = \text{if } L < 0, K + L, \text{ else } K$	33	33	45	34
N	High Range of Expected Timber Purchases [MMBF], FY22	$N = \text{if } L < 0, K, \text{ else } K + L$	46	46	58	47
O	Expected Timber Purchases, FY22	$O = \text{median (M:N)}$	40	40	52	40
Offer						
P	Fall-Down Between Volume Offered and Sold	P	37%	37%	37%	37%
Q	Offer Needed to Meet Volume Under Contract (VUC) Objectives	$Q = O + (P*O)$	54.1	54.1	70.6	55.1

Notes on model item data and calculations:

- A. CY21 from mill survey, held constant over scenarios. Estimated from equipment installed in the mills, based on industry standard 250-day per year, two shifts per day annual operating schedule
- B. Five year average from mill surveys held constant over scenarios
- C. Five year average from mill surveys held constant over scenarios
- D. With Limited Export Policy (2007), all timber considered "useable" minus utility.
- E. Auto calculation
- F. Amount of time needed to replenish inventory. Sales selected for inclusion based on 1) Sale volume over 500 MBF; 2) Award date = FY15 to present. Excludes settlement, non-resource stewardship (IRSC), defaults, and study sales. Held constant over scenarios
- G. Auto calculation
- H. Statistical t-distribution critical value p value for one-tailed t-test
- I: Auto calculation
- J: Sum of Tongass remaining volume under contract as of December 31, 2021 held constant over scenarios
- K: Projected Tongass harvest for 2022, table 5 from Daniels et al.. (2016)
- L: Auto calculation
- M: Auto calculation
- N: Auto calculation
- O: Auto calculation
- P: Ten year average of difference between Tongass timber offered and sold held constant over scenarios
- Q: Auto calculation