

TO: Mark Rey  
FROM: Owen Graham  
DATE: October 23, 2007  
RE: 2000 Annual Demand Report

### Summary

**This memo critiques the 2000 Annual Demand Report. The report procedures are unnecessarily complex and the numerical assumptions used in the report were incorrect. However, the approach could be used once these assumptions are corrected. The memo shows how the numbers must be modified to correctly reflect on the ground realities.**

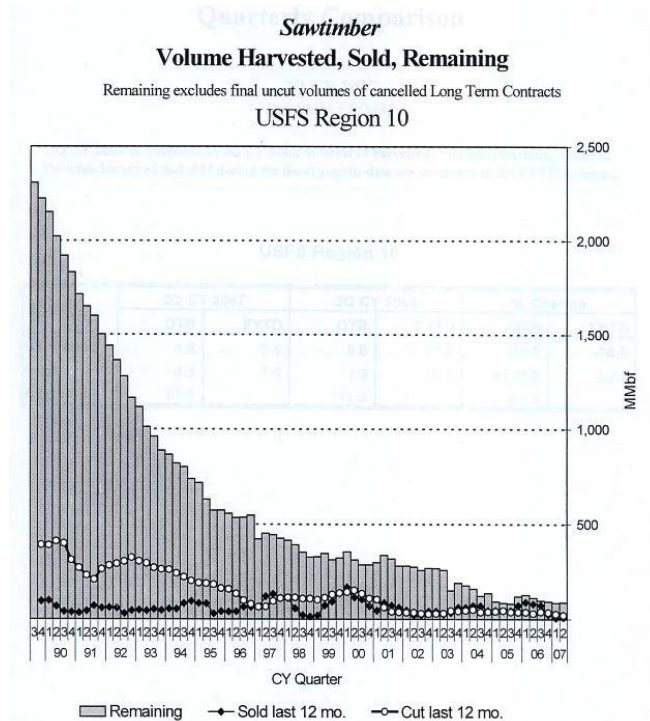
**Once corrected, the correct demand assumption should be 463 mmbf annually using the reports analytical methods.**

The Forest Service relies upon a 2000 report (*Responding to the Market Demand for Timber*) to determine how much timber to advertise for sale each year. The report relies primarily upon past harvest levels to set an “annual demand level”, and yet even the federal agencies own economists concede that reliance upon past harvest levels as an indicator of demand is inappropriate.

The report, which was initially prepared in 1998, purports to “allow the industry to accumulate an adequate ‘volume under contract’ (a supply of uncut volume), then to monitor industry behavior and adjust timber program levels to keep pace with harvest activity.” In fact, use of the report has prevented the industry from accumulating adequate volume under contract because the agency uses the report as a cap on the volume they can sell each year and, if they cannot sell more than is harvested, then it is impossible to accumulate additional volume under contract.

The author of the report lacked a fundamental understanding of the industry and its timber supply needs. For instance, the report states, “After the Tongass Timber Reform Act passed, the long-term contracts between the Forest Service and the pulp companies continued to offer some assurance of stability in the supply of timber made available each year. However, a guaranteed timber supply was not enough to ensure the viability of these operations in the face of increasingly competitive markets.” The reality

is that the unilateral contract changes that resulted from the Tongass Timber Reform Act (TTRA) took away the “*guaranteed timber supply*” (see in the graph below that the volume under contract declined from over two-billion board feet to around 100 million):



In addition, the unilateral changes took away the assurance of an *economic timber supply*. Prior to the contract changes, the agency was prohibited from providing timber parcels to at least one long term sale purchaser that would place the purchaser at a disadvantage with respect to a similar enterprise in the Puget Sound region. Subsequent to the contract changes, the agency directed the purchaser to accept several timber parcels that were not economically viable. The agency warned that if the purchaser declined to accept the economically deficit timber, that volume would be eliminated from their contract.

There are other examples that indicate the report’s author was misled by both misinformation and the popular rhetoric of the time; a time when the agency was defending its unilateral contract actions in the US Court of Claims.

The output of the annual calculation proposed in the report is as follows:

**Equation 1. Tongass Timber Consumption,  $e = (a \times b/c) \times d$**

where

**$a$  = Installed and operable mill capacity**

- b = Industry rate of capacity utilization**
- c = Percent usable wood in average timber sale**
- d = Share of industry raw material provided by the Tongass**

The report uses an installed mill capacity estimate of 284 million board feet, while a more realistic estimate prepared by the Juneau Economic Development Council through a rigorous process estimated the installed capacity at over 500 million board feet. That error becomes irrelevant however, because the “industry rate of capacity utilization” simply reduces the installed capacity so that it matches the past manufacturing level. Similarly if a new mill were constructed, the formula would limit the annual timber sales for that mill by the past “rate of capacity utilization”. Realistically, a new mill cannot be financed anyway unless there first is a timber supply adequate to amortize the investment.

The report addresses the need to restore and maintain an adequate volume under contract, but the assumptions and factors used to calculate that volume are not reasonable. For instance, the agencies calculation for 2007 is depicted below:

Determining the Range of Expected Timber Purchases - Fiscal Year 2007  
December 7, 2006

Elements	Notation	Limited Lumber	Expanded Lumber	Medium Integrated	High Integrated
<b>Demand</b>					
A. Installed and operable mill capacity (MMBF, log scale)	a	290	290	290	290
B. Industry rate of capacity utilization	b	33%	45%	66%	70%
C. Share of industry raw material provided by the Tongass	c	65%	65%	65%	65%
D. Percent usable wood in average NF timber sale	d	53%	66%	91%	91%
E. Annual Tongass timber consumption (MMBF, theoretical)	$e = ((a * b) * c) / d$	118	127	136	144
F. Standard deviation of lead time (years)	f	0.44	0.44	0.44	0.44
G. Average lead time (years)	g	0.51	0.51	0.51	0.51
H. Prob. of meeting consumption (one-tailed test for 99% at infinity)	h	2.33	2.33	2.33	2.33
I. Timber inventory requirements (MMBF)	$i = (e * g) + ((e * h) * f)$	182	196	210	222
J. Volume Under Contract as of September 30, 2006 (MMBF)	j	102	102	102	102
K. Projected harvest (MMBF), FY 07 from PNW	k	50	62	67	67
L. Projected inventory shortfall (MMBF)	$l = i - j$	79	94	107	120
M. Low range of expected timber purchases (MMBF), FY 07	$m = \text{if } l < 0, k+1, \text{ else } k$	50	62	67	67
N. High range of expected timber purchases (MMBF), FY 07	$n = \text{if } l < 0, k, \text{ else } k+1$	129	156	174	187
O. Expected timber purchases, FY 07	$o = \text{median}(m:n)$	90	109	121	127
<b>Offer</b>					
P. Fall-down between volume offered and volume sold	p	30%	20%	15%	10%
Q. Required offered to meet VUC sell objectives (MMBF), FY 07	$q = o + (p * o)$	116	131	139	140

If more realistic assumptions were used in this calculation, the result would be much different:

- A. The installed capacity is currently 370, not 290 as depicted.
- B. The rate of capacity utilization is mostly a result of a constrained timber supply, not the demand for timber or timber products. The mill operators want to operate their facilities at capacity, thus the goal should be 100%, not 70%.
- C. The share of raw material supplied by the Tongass assumes the State will provide 1/3 of the volume, but the state has only about 2% of the timber supply in the region. The State accelerated their timber sale program to provide emergency timber to the mills in recent years, but that supply is mostly depleted plus there is

- no certainty that the State will continue to require domestic processing, thus the calculation should assume that 100% of the raw materials for the mills will have to come from the Tongass, not 65%.
- D. Currently there is no manufacturing facility that can utilize utility logs which represent about 15% of the total timber supply. Further, about 5% of the timber sale volume is Yellow Cedar which is most often exported, not processed. Thus the calculation should assume 80% usable wood supply at this time, not 91%.
- E. **If factors A through D are corrected { $E = ((370 * 1) * 1) / 0.8 = 463$ }, the resulting calculation will yield 463 mmbf, not 144 mmbf! In other words, a harvest level of 463 mmbf would provide 370 mmbf of usable wood for the mills and they would be able to operate at a two-shift capacity.**
- F. The timber sale data in table 8 of the 2000 report that was used to develop the standard deviation estimate has many errors and omissions including who the purchasers were, how much volume they had under contract when they purchased the sales and what the timber sale volumes were. Further, the calculation does not consider the most important lead time issues such as the size of the timber sales and the amount of time needed to complete the necessary access roads. The calculation also ignores the need to have a mix of summer and winter wood in order to extend the operating season and minimize winter log inventories. In short, the calculation and the data it relies upon do not take into account the practical, logistical considerations that can make a huge difference in profitability.
- G. The Forest Service has long conceded that the mills should have three years of timber under contract. The 0.51 years of lead time calculated in the 2000 report is most likely a result of two persistent factors:
1. The majority of timber sales are advertised in September and awarded in October or November. Consequently the purchaser often had to wait at least until spring no matter how short of timber they were and,
  2. The purchasers have been short of timber, thus they typically started operations as soon as the weather allowed - usually April or May, which is about half a year after the sales were awarded.
- H. This statistical calculation seems to rely upon the past, constrained timber sale program. We hope that history will not be repeated.
- I. The timber inventory planning requirement should be a three-year supply or three times the 463 mmbf or 1,389 mmbf, not 222 mmbf. (1,389 mmbf is still much less than the 2,300 mmbf the industry had under contract in 1990).
- J. This number seems to be about correct.
- K. This projected harvest level was calculated in part E as 463 mmbf, not 67 mmbf.

- L. The projected inventory shortfall in this calculation should be  $1,389-102= 1,287$  mmbf, not 120 mmbf.
- M. The corrected low range becomes 463 mmbf, not 67 mmbf.
- N. The corrected high range becomes 1,750 mmbf, not 187 mmbf.
- O. The corrected median becomes 1,107 mmbf, not 127 mmbf.
- P. The fall-down between volume offered and volume sold is usually a function of the amount of timber the industry has under contract, the location and mix of timber in the timber sales and the purchaser's opinion of the economic viability of the offered timber sales.
- Q. If the 10% falldown estimate is correct, the median required offer becomes 1,218 mmbf.  $\{1,107+ (0.10*1,107) = 1,218\}$ .

If the Forest Service continues using this 2000 report procedure as it has in the past, then our timber supply will not be restored. The real demand for products produced from the Tongass is virtually unlimited and the demand for timber sales from the purchasers is the amount needed to operate their mills on a two-shift basis. The minimum volume needed to have a viable, integrated is 360 mmbf annually. A three year supply at the 360 level equals 1,080 mmbf. We have proposed that the Forest Service ramp up quickly to a three-year supply for the existing industry plus simultaneously prepare a series of large 10-year timber sales that can be used to either upgrade and stabilize existing mills or to foster new manufacturing facilities.

cc Governor Sarah Palin  
Joe Balash  
Senator Ted Stevens  
Senator Lisa Murkowski  
Congressman Don Young  
Steve Silver  
AFA Executive Committee