



# Déjà Vu on the Tongass:

How Overestimating  
Timber Demand  
Prevents  
Responsible  
Stewardship

Economic  
Analysis

SCIENCE FROM



THE WILDERNESS SOCIETY

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# **Déjà Vu on the Tongass:**

**How Overestimating  
Timber Demand Prevents  
Responsible Stewardship**

**By**

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THE WILDERNESS SOCIETY



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- **The Economic Benefits of Wilderness: Focus on Property Value Enhancement;** Science and Policy Brief, March 2004, Phillips.
- **U.S. Forest Carbon and Climate Change: Controversies and Win-Win Policy Approaches;** Economic Analysis, July 2007, Ingerson.
- **Natural Dividends: Wildland Protection and the Changing Economy of the Rocky Mountain West;** September 2007, Haefele, Morton and Culver.
- **Greater than Zero: Toward the Total Economic Value of Alaska's National Forest Wildlands;** (forthcoming), Phillips, Silverman and Gore.

These reports and related Science and Policy Briefs are available on The Wilderness Society's web site at [www.wilderness.org](http://www.wilderness.org) and from The Wilderness Society, Ecology and Economics Research Department, 1615 M Street, NW, Washington, DC 20036 (202-833-2300).

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## Foreword


By law—for the period covered by its management plan—the Forest Service must estimate the market demand for timber from the Tongass National Forest (Tongass) and use those projections to set annual timber harvest levels. In theory, the agency would select harvest levels that meet market demand and sell timber at a profitable price. The practice is far different, however. Year after year the agency has consistently overestimated demand, resulting in inflated timber program budgets and money spent on road-building and on the preparation of timber sales that never get completed. Taxpayers end up footing the bill for a wasteful process at a cost of millions of dollars per year.


In 2005 a court order required the Forest Service to amend its latest Tongass Land Management Plan in part to correct its forecasts of the market demand for timber. While the agency complied with the courts and produced a new report with projections that set timber harvest levels through 2025, it failed to put the issue to rest. The Wilderness Society's report, *Déjà Vu on the Tongass: How Overestimating Timber Demand Prevents Responsible Stewardship*, explains how the Forest Service has, once again, overestimated the demand for timber to the detriment of this magnificent forest.

Authors Dr. Pete Morton, Dr. Spencer Phillips, and Anne Gore begin their analysis by describing the inherent competitive disadvantages of the Southeast Alaska timber industry and recent trends in the global marketplace, showing the continued impact of these factors on the Tongass timber program. The study goes on to address the implicit assumptions underlying the Forest Service's timber demand model, which may have been valid several years ago but are not valid today, and looks at the downturn in the domestic lumber market and the agency's new log export policy for the Tongass—issues that undoubtedly affect market demand estimates and decisions about timber harvest levels.

Recognizing the important role the timber industry has played in Southeast Alaska's history, The Wilderness Society does not oppose continued logging in the Tongass. But we do believe harvest levels should be set based on realistic projections of actual market demand and that taxpayers should not be subsidizing activities that undermine other valuable forest resources. As this report explains in its concluding sections, the Tongass contains many other economic assets in addition to its timber resources, including wild salmon streams, clean water and scenic views, all of which could be harmed by ill considered logging activity.

The Forest Service has a clear charge: balance the multiple uses and benefits of the Tongass National Forest for the American people. By choosing to offer timber for sale based on exaggerated demand projections, its management of the forest will inevitably produce an imbalance. The result will be a greater emphasis on logging and road-building and a shift in priorities and funding away from the true economic engines of Southeast Alaska such as nature-based tourism and commercial fishing. With this report The Wilderness Society hopes to make the case for future management decisions on the Tongass that reflect the reality of local, regional, and global markets. This change in approach promises to generate more productive and successful economic outcomes for the region and a healthier forest overall.

  
William H. Meadows  
President  
The Wilderness Society

  
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Vice President  
Ecology and Economics  
Research Department

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## Report Highlights

America's largest national forest, the Tongass National Forest in Alaska, is indispensable to salmon fishermen, native cultures, and local economies. The Tongass has a wealth of resources from scenic views to old growth forests to habitat for hundreds of species including wild salmon, brown bears, and whales. Unfortunately, not all resources are given equal weight by the agency charged with managing the Tongass. Over the last decade and more, the Forest Service has consistently overestimated market demand for timber resulting in a Tongass timber program that has been significantly, and unnecessarily, subsidized at the expense of other forest resources and uses.

In this report we explain how the most recent U.S. Forest Service projections once again overestimate demand for Tongass timber. The Forest Service estimates that demand is increasing, despite ample evidence to the contrary. The agency bases its timber demand projections on outdated assumptions about markets for Alaska timber, Alaska's forest product mix, future opportunities for an integrated forest products industry, and Alaska's ability to compete in the global market.

### Key findings and conclusions include the following:

► **The timber industry in Southeast Alaska will always be affected by inherent competitive disadvantages.** Because of its geographic location and distance from markets, logging, manufacturing, and transportation costs have always been high in Southeast Alaska. Southeast Alaska's forests are also dominated by tree species with lower value as timber. A history of over-harvesting the highest value trees further exacerbates this disadvantage for the Alaska timber industry. (The remaining trees most accessible for logging are of lower quality.) Southeast Alaska is a high cost producer competing regionally against more efficient mills in the Pacific Northwest and Interior British Columbia.

► **Global market conditions are changing and recent trends indicate that demand for Tongass timber will continue to decline.** The lumber export market to Japan has collapsed and is no longer a major export destination for Southeast Alaska wood products. The current market for softwood produced in Southeast Alaska is the U.S. domestic market, which is dominated by modern efficient mills in the Southern U.S., Canada, and the Pacific Northwest. The domestic lumber market is also currently in decline as a result of the downward trend in the housing market. Prices paid for Alaska's highest value tree species have been falling over the last ten years. Timber jobs are also declining. All of these trends combine to suggest that market demand for Tongass timber is not increasing and will not increase anytime soon, as the Forest Service suggests.

► **The latest Forest Service projections are flawed as a result of the following faulty assumptions.** The agency assumed that the Pacific Rim, especially Japan, continues to drive demand for Southeast Alaska timber when that is no longer the case. The agency further assumed that U.S. domestic demand can be calculated as a simple multiple of the demand estimated for the Pacific Rim – without providing any data supporting such a relationship. The Forest Service ignored Alaska's competitive disadvantage and historic downward trends when predicting new trends. And the

agency's demand estimate assumed new mills will be built in Southeast Alaska, when history and the current low market demand suggest otherwise.

▶ **A new management paradigm is needed on the Tongass in order to appropriately meet the agency's multiple use mandate, and ensure proper long-term stewardship of the national forest as a public resource.** Specifically, this report calls for:

- Increased Forest Service funding directed at fish and wildlife habitat restoration and improvement, and shifting priorities away from the harvest of old growth trees
- Protecting old growth reserves and subsistence uses of the forest
- Investment in recreational uses of the forest
- Increasing the recognition given to the non-timber economic benefits of the forest
- Establishing an appropriately sized timber program that reflects economic realities, and is able to sustain and support local jobs and local needs

The Wilderness Society hopes that this report will bring attention to the need for a new market demand analysis, and ultimately a shift in Forest Service policy that reflects the economic realities of Southeast Alaska and supports the true economic drivers of this region, and the best interests of all Americans.

## Introduction

Southeast Alaska's coastal landscape is a maze of inlets and lush, forested islands, often shrouded in mist. Representing the largest remaining intact temperate rainforest on earth, this now-rare ecosystem once extended along the border of North America's Pacific coast all the way to the California redwoods.

For thousands of years the Tlingit, Haida, and Tsimshian have called Southeast Alaska home, making their living from the rich plant and animal life unique to this old-growth rainforest. From the ancient stands of Sitka spruce, western hemlock, yellow and red cedar to the rivers and streams that support five species of salmon, and in turn feed brown bears and bald eagles, to the other land mammals, birds and marine life including whales, otters, and seals, many of these valuable resources remain intact and continue to sustain Native populations, as well as more recent human settlers.

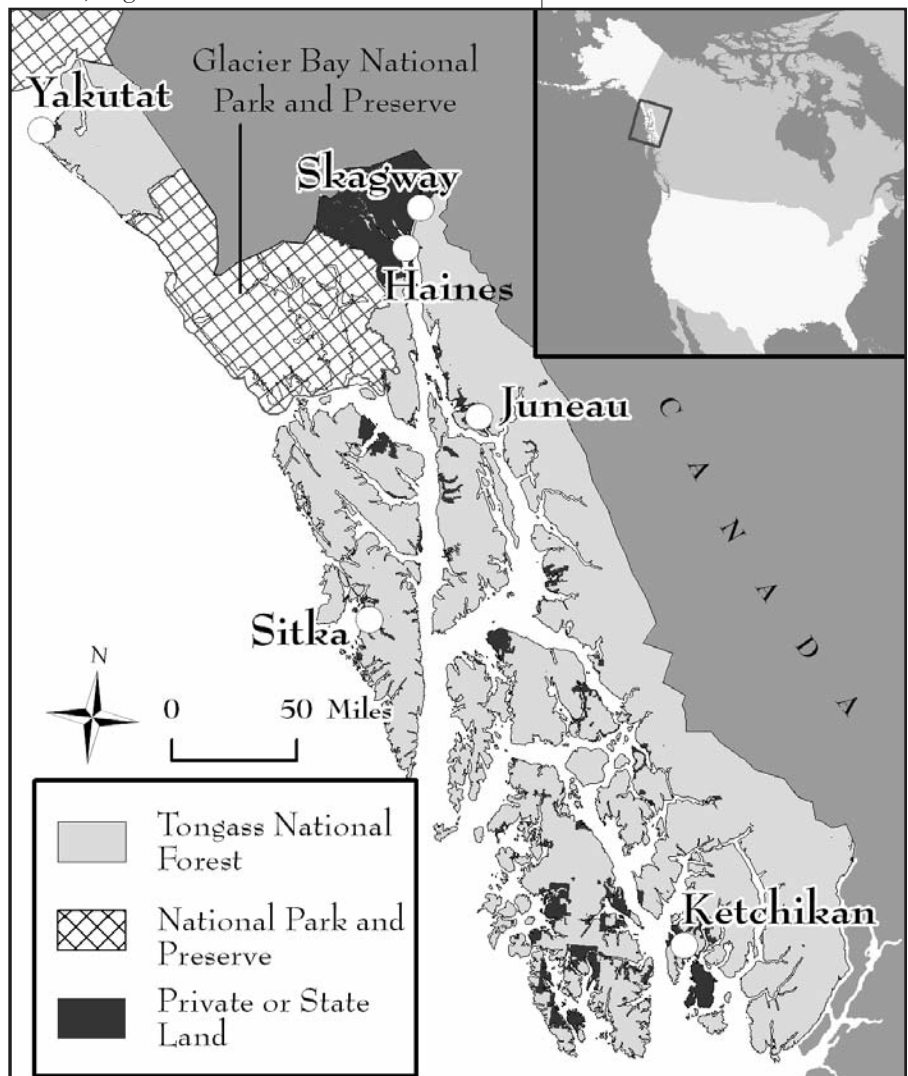
In 1907, much of this unparalleled landscape—nearly the entirety of Southeast Alaska's narrow panhandle between the Pacific Ocean and Canada's British Columbia—was placed under federal ownership and management as the Tongass National Forest (Tongass) by President Theodore Roosevelt. At 16.8 million acres the Tongass is America's largest national forest. Although well known today for its tree-covered landscape, less known is the fact that two-thirds of the Tongass is actually mountains, ice fields, tidal glaciers, tundra, muskeg bog, or scrub forest. Only one-third of the Tongass land area supports productive forests and less than 4 percent contains the larger trees that are most valuable for wildlife as well as for timber (Finch and Phipps 1993).

It is over these few, productive areas of the Tongass that ongoing struggles have ensued over the protection, management, use and development of resources, especially timber. As the Forest

Service prepares to release its latest Tongass Land Management Plan, a document that will decide how much productive forest will be cut for timber and how much will be protected to preserve the last remaining intact ecosystems of this kind in the world, we focus on an economic element of this debate—market demand for Tongass timber.

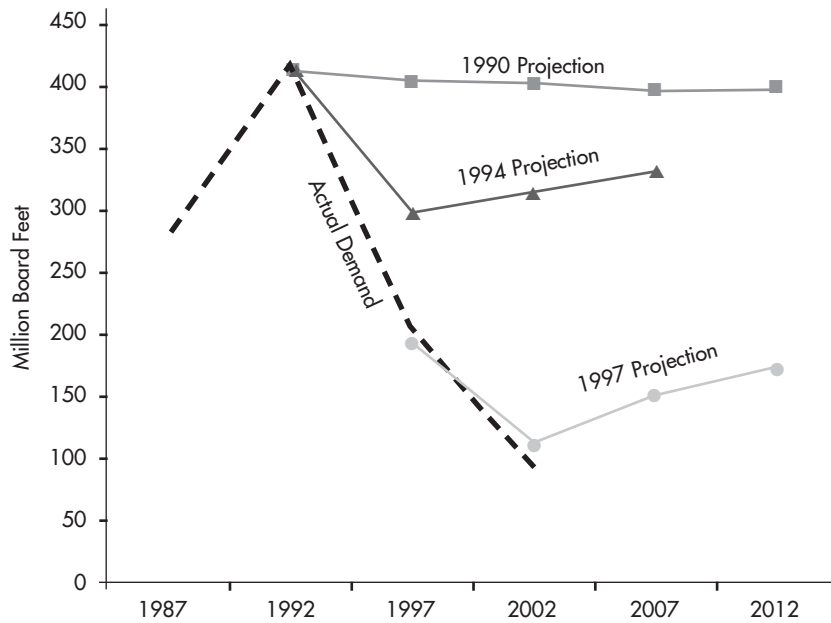
As early as 1919, the problem of market demand emerged as a significant challenge to establishing a viable timber industry in Alaska (Haycox 1997). The cost of shipping Alaska's wood products to distant markets was simply too high to be competitive, so logging remained limited to small-scale harvests of easy-to-access, high-value trees. The timber

At 16.8 million acres the Tongass National Forest covers nearly the entirety of Southeast Alaska's panhandle.



**FIGURE 1.**  
**Actual Timber Demand for the Tongass National Forest**  
**Compared with Past Forest Service Projections of Demand**

Figure 1 illustrates the poor track record of estimating timber demand on the Tongass National Forest, and the upward bias in the past projections made by the National Forest Service.



Source: Brackley et al. 2006 (Table 3).

sustain the pulp and logging industries. But, when timber markets crashed in the 1980s, even millions of dollars in taxpayer subsidies could not save the mills.

In 1990, the Tongass Timber Reform Act directed that the Forest Service set its timber harvest level each year to meet market demand, and sell timber at a profitable price. Management plans for the Tongass National Forest are now required to estimate demand for timber, and from that estimate, define the suitable timber base<sup>1</sup> and the amount of logging allowed on the forest for the next 10-15 years. Over the years the agency's demand forecasts for timber from the Tongass and other national forests have been a contentious issue, partly due to the Forest Service's tendency to forecast greater demand than eventually occurred (Clawson 1979, Hagenstein 1990, O'Toole 1992). In the past, the Forest Service inflated forecasts of timber demand and stumpage prices<sup>2</sup> in order to justify higher timber budgets and higher logging levels on the national forests (Morton 1999). The Tongass National Forest is a prime case in point.

Figure 1 shows actual historical demand for timber from the Tongass, along with three previous agency forecasts for demand, illustrating the poor track record of estimating demand for Tongass timber. While each subsequent Forest Service forecast was lower than the previous forecast, each forecast nonetheless overestimated the actual market demand for timber from the Tongass.<sup>3</sup>

Overestimating timber demand in this way biases the land allocation

industry focused on providing lumber to fill local needs, with only a few exports of higher grade lumber for specialty products (Sisk 2007). It was not until the 1950s when the Forest Service offered a 50-year supply of timber from the Tongass at subsidized prices that investors showed interest and industrial-scale logging began. Two large pulp mills processed hundreds of millions of board feet of Sitka spruce and hemlock from the Tongass, and annual subsidies for roadbuilding and timber sales were also mandated by law (Haycox 1997) to

<sup>1</sup> The suitable timber base is the land available for logging. The suitable timber base is a key factor in determining where and how much logging occurs on national forests.

<sup>2</sup> Stumpage prices refer to the price of standing trees (see page 13 for more about stumpage).

<sup>3</sup> The 1990 projections assumed two pulp mills would continue operating, while the 1994 projections assumed one pulp mill operating. The subsequent closures of both pulp mills explain much of the overestimation of demand. The pulp mill closures in the past also underscore the problems of assuming future Alaskan lumber mills will be built and operate profitably.

process and results in millions of taxpayer dollars lost.<sup>4</sup> Specifically, inflated demand numbers result in larger suitable timber bases, which in turn make it easier for the Forest Service to seek bigger budgets from Congress for timber sale-planning and road building. The result is that taxpayers have continued to pay millions of dollars in subsidies for the construction of new roads that access marginally productive land and low-value timber, while also undermining water quality and degrading other values of the forest, such as scenic views, recreation and community use areas, subsistence, and commercial fish resources.

Today, the issue of market demand is at the center of a debate over the current Tongass Land Management Plan (TLMP), which will guide management actions on the Tongass through 2025. During the planning process for the 1997 Revision to the Tongass Land Management Plan, and in the resulting Record of Decision and Environmental Impact Statement (EIS), the Forest Service used a timber demand figure nearly double the amount projected by agency economists Brooks and Haynes (1997) in their demand analysis prepared for the Tongass National Forest. This error resulted in more land being included in the suitable timber base than was necessary to supply local mills (Crone 2007). Many important community use areas<sup>5</sup> were also slated for logging under the 1997 plan (SEACC 2007). The 1997 TLMP was subsequently appealed, in part because of the inflated demand projections.

In an August 2005 opinion, Judge Singleton of the Ninth Circuit Court of



PHOTO COURTESY SOUTHEAST ALASKA CONSERVATION COUNCIL (SEACC)

Appeals ruled that because of the error in its demand projections, the Forest Service must prepare a new revised Forest Plan for the Tongass. As input, the agency's Pacific Northwest Research station was asked to prepare new projections of market demand for timber in Southeast Alaska. In response to the court ordered correction, new Tongass timber demand projections were completed by Brackley et al. (2006) in a Forest Service report in July 2006.

Subsequently, The Wilderness Society hired Dr. Lisa Crone, a former Forest Service economist, to prepare a thorough review of the economic literature and an expert peer review of the Brackley et al. (2006) report. As is apparent from our own expert review of the Brackley report, as well as Dr. Crone's review, the Brackley et al. (2006) report not only overestimates timber demand on the Tongass, in keeping with

For thousands of years, people have made a living from Southeast Alaska's rich wealth of natural resources. Subsistence harvest, such as this group catching sockeye salmon, remains an important part of local culture. Such uses of the Tongass Forest, and the community use areas where these activities take place, are important for the Forest Service to keep in mind when making planning and management decisions.

<sup>4</sup> The land allocation process in forest planning is the process by which land in the national forests is designated for various uses, such as timber production (i.e. the suitable timber base), recreation, roadless area protection, wilderness, etc. In the past the Forest Service has used a computer model called Spectrum to assist in the land allocation process. For more detail, see Morton 1999.

<sup>5</sup> Community use areas are areas identified as important for subsistence, big game hunting (brown bear, black bear, deer), and/or fish production (Coho and pink salmon, sport fish harvest)

▼ Large quantities of low-value tree species, and higher labor, sawmilling, manufacturing and transportation costs put the Southeast Alaska timber industry at a competitive disadvantage to nearby regions. ▲

longstanding agency tradition, but bases future demand on an assumption of robust markets that no longer exist and on an unjustified expansion within the timber industry.

As we explain in further detail below, there are five principal reasons why the current projections are overly optimistic:

1. Alaska's forest products industry has long been, and will continue to be, at a competitive disadvantage relative to other regions; it will therefore not supply a significant proportion of the markets that do exist.
2. This competitive disadvantage will make it challenging and highly unlikely that the timber industry in Southeast Alaska can increase its market share.
3. The Japanese market for Southeast Alaska's timber has collapsed and no longer represents a large demand for timber from the region.
4. The Brackley model is based on Japanese markets, which makes the model obsolete, as it does not represent current market conditions.
5. The hypothetical mills assumed by the Forest Service are likely to remain just that – hypothetical – for the foreseeable future.

In order to provide the proper context for understanding the current and likely future market situation, the first section of this report explains the competitive disadvantages faced by the Southeast Alaska timber industry operating in an increasingly competitive market. The next section examines recent trends in the Japanese export market, as well as trends in stumpage prices, taxpayer subsidies and timber jobs associated with the Tongass timber program. Page 15 begins with an examination of whether the implicit assumptions of the timber demand model are valid today, followed by a critique of the explicit assumptions of the model used by Brackley et al. (2006). Problems identified include assuming Pacific Rim demand drives domestic demand, assuming new trends that are inconsistent with historic trends, and assuming that new mills will be built without providing economic data to support such an assumption. Page 26 includes a discussion of recent developments including the downturn in the domestic lumber market and the Forest Service's new log "export" policy for the Tongass. The report's concluding section includes our recommendations as well as the likely consequences if the Forest Service chooses to offer timber for sale based on the errant demand projections.

## Competitive Disadvantages of Southeast Alaska's Forest Products Industry

The timber industry in Southeast Alaska has several competitive disadvantages relative to nearby regions, particularly the Pacific Northwest (PNW) in the U.S. and Interior British Columbia (Interior BC) in Canada. These disadvantages include: large quantities of low-value tree species; higher labor, sawmilling, manufacturing and transportation costs; and lack of capital investment in value-added processing.

### The Tongass Has Large Volumes of Trees with Low Timber Values

Alaska generally and the Tongass National Forest specifically have vast amounts of forest land that contain tree species with low timber values. Figure 2 shows the species and grade distribution of timber on the Tongass National Forest suitable land base (as defined in 1997). Based on historical use patterns, 42% of the volume (utility and number 3 hemlock and spruce) is not suited for lumber production (Crone 2007). Historically, the profitability of Alaska sawmills was closely related to having a local market for both low valued logs and mill residues. Also, much of the logging and mill profitability was heavily subsidized by taxpayers. With the closure of the region's two pulp mills in the 1990s, the Southeast Alaska industry lost the market for low grade hemlock (utility and number 3 hemlock).

Number 1 and 2 hemlock can be used for lumber and as Figure 3 shows, hemlock lumber once accounted for more than half of all Alaska lumber exports to Japan. However, that market dried up partially due to a change in Japanese building codes that resulted in a dramatic decrease in the use of traditional, solid wood lumber products. As the Japanese demand for hemlock

lumber has fallen, so too have total Alaska lumber exports.

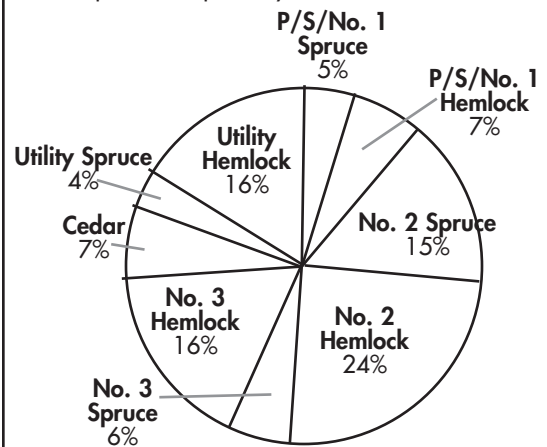
### Alaska Is Faced With High Labor, Operating, Sawmilling and Manufacturing Costs

To compound the economic problem from large volumes of low valued trees, the timber industry in Alaska is faced with high labor, sawmilling, and manufacturing costs – along with regional competition from more efficient mills.

The timber industry in Southeast Alaska has always been characterized by some of the highest logging and manufacturing costs in the world (Crone 2007). Difficult operating conditions exist due to a relatively severe climate, difficult terrain, the physical characteristics of the resource, the need to

**FIGURE 2.**  
**Species and Grade Distribution - Tongass National Forest Suitable Land Base**

The forested land on the Tongass National Forest is dominated by Hemlock and Spruce forests, accounting for 63 and 30 percent respectively of the suitable land base.

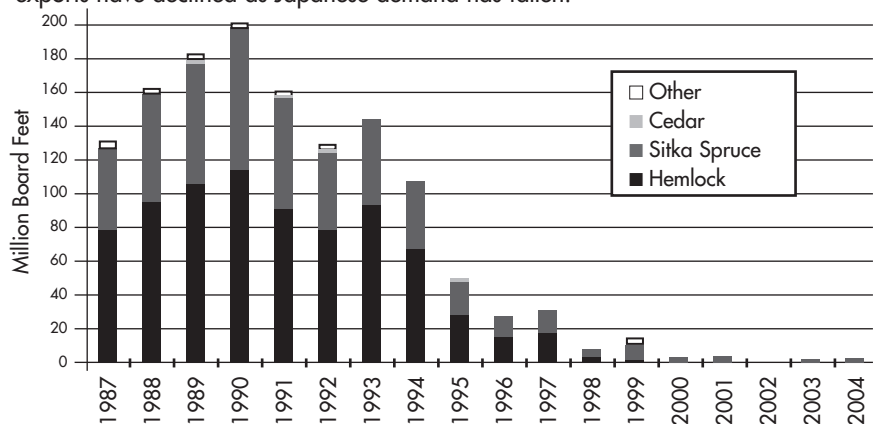


Source: Southeast Regional Timber Industry Task Force 1997.

**FIGURE 3.**

### Composition by Species of Alaska Softwood Lumber Exports to Japan

In the past, lumber from Hemlock and Sitka Spruce was exported to Japan, but exports have declined as Japanese demand has fallen.



Source: Warren (2000, 2006), Crone (2007).

MAP COURTESY ALASKA CENTER FOR THE ENVIRONMENT, CONSERVATION GIS



Distance to markets is an important variable to consider when estimating market demand for Alaskan timber.

set up and supply logging camps at remote locations, the need to transport logs long distances to mills and products long distances to markets, the absence of integrated road and rail networks, technologically outdated mills, and high labor and other factor costs (TWS 1986, Robertson and Brooks 2001, WPIAC 2006, Crone 2007).

Robertson and Brooks (2001) provide a thorough review of the competitive disadvantage facing the timber industry in Southeast Alaska. For example, skidding and logging costs in Southeast Alaska increased 3.7 percent per year between 1985 and 1994 (Robertson and Brooks 2001). The increase in skidding and logging costs are primarily attributable to more difficult terrain, longer timber hauls, and log size – factors that still exist today.

Total sawmilling costs in Southeast Alaska are significantly higher than those in the Pacific Northwest, and the difference is increasing over time (Robertson and Brooks 2001). Alaska sawmills are also relatively inefficient. Overrun refers to the amount of lumber that can be produced from a unit of log input – and can be viewed as a measure of efficiency in converting a log into

lumber. The higher the overrun rate, the more efficient the mill. Brooks and Haynes (1997) cited an estimated overrun of 1.22 for Southeast Alaska in 1994. In contrast, the overrun in the PNW is 1.7, about 39% higher than Alaska. The lower overrun in Alaska indicates that Southeast Alaska sawmills incur considerably higher costs for their log inputs (Robertson and Brooks 2001).

Robertson and Brooks (2001) also found that manufacturing costs in the sawmilling sector are significantly higher in Southeast Alaska than in the PNW – ranging from 19% higher in 1984, to about twice as high from 1991-1994. Manufacturing costs for Southeast Alaska increased at an average 3 percent real growth rate per year from 1984 to 1994, while manufacturing costs in the PNW were decreasing (Robertson and Brooks 2001). Declining log quality and log size resulting in increased processing and handling costs may be partly responsible for the higher manufacturing costs in Alaska. In summary there is little evidence to suggest that Alaska’s increasing cost trends have abated. In fact, today Alaska’s competitive disadvantage in timber production is even more pronounced.

## Alaska is a High Cost Producer in a Competitive Marketplace

Alaska shares an integrated market with British Columbia and the Pacific Northwest. As Robertson and Brooks (2001) note: “With the highest total production cost of the three regions and a substantially lower stumpage value, the marginal position of Southeast Alaska as a high cost producer is evident.” In the past, Alaska was better able to compete. But as other regional producers have become more competitive and the market more integrated, Alaska’s disadvantage has become more pronounced (Crone 2007).

Alaska’s competitors in the PNW and Interior BC not only have higher valued trees in second growth forests, but have also adopted many innovations in order to remain competitive in today’s wood products markets. The shift to mills geared towards utilizing smaller log sizes was driven by the region’s transition from harvesting old growth forests on federal lands to harvesting second growth and third growth forests on private lands where old-growth timber was virtually non-existent (Crone 2007). By 1992, seventy-five percent of the softwood harvest in the PNW originated from private timberlands (Daniels 2005).

Partially as a result of investment in efficient sawmills, the timber industry in the PNW and in Interior BC remains profitable.<sup>6</sup> This is in stark contrast to the situation in Coastal British Columbia (Coastal BC) and Southeast Alaska where the timber industry is struggling to survive (Gilbertsen and Robinson 2003, USFS Briefing Paper 2003, Dixon 2006, AFSI 2006, Crone 2007). There is currently no evidence that Alaska producers are decreasing their logging or manufacturing costs to a level necessary for increasing market



PHOTO COURTESY SITKA CONSERVATION SOCIETY

share. Given a long history of being a high cost producer, it seems quite unlikely that Alaska will increase its market share in the regional export or domestic lumber market in the near future. Given this economic reality, it is even more unlikely that capital investments will be made to expand the Southeast Alaska timber industry.

Table 1 summarizes important factors contributing to continued competitiveness of the PNW and Interior BC wood products industries, and the continued decline of the Southeast Alaska and Coastal BC industries. The competitive advantage gained by sawmills in the PNW and Interior BC is a result of uniform log sizes, closer proximity to markets, and more efficient sawmills.

### History of Over-Harvesting High-Valued Species Exacerbates Competitive Disadvantages

Perhaps in response to the large volumes of low valued hemlock trees and high operating costs, the timber industry has a history of logging the largest and most valuable species on the

This pulp mill in Sitka was one of two that operated in Southeast Alaska with help from a 50-year contract guaranteeing subsidized lumber from the Tongass.

<sup>6</sup> Although, with the current drop in lumber prices, problems in the mortgage markets and a general slowdown in housing, the future for sawmills in the PNW is likely to be less profitable than in the recent past.

▼  
**British Columbia and the Pacific Northwest have adopted innovations in order to remain competitive in today's wood products markets.**  
 ▲

Tongass National Forest. In a 1986 publication *The Wilderness Society* (TWS) writes,  
 Since the introduction of the pulp mills and large-scale harvests in the 1950s, the general pattern of harvesting has been to cut the largest volume, most accessible and most valuable stands. Between 1956 and 1981, the mean volume harvested per acre was about 37 mbf (scaled volume). It is estimated that this harvested acreage included one half of all the highest volume class (sites exceeding 50 mbf per acre) acreage that existed in the Tongass in 1950. ... The commercial quality of the forest as a whole must inevitably decline in the future because of the over-reliance on high volume stands in past and current harvests (1986:113-114).

Mehrkens (2006) also documents this trend in his analysis of Tongass timber sales:

- When the pulp mills shut down in the 1990s, radical changes occurred in the Tongass timber program due to a loss of traditional markets for middle and lower grade timber. Eager to help the industry, the Forest Service has bent over backwards to supply valuable timber – especially Alaska yellow cedar—the most valuable timber in the export markets (Mehrkens 2006).
- Between 1985 and 2006, the logging of Alaska yellow cedar has increased from 3 percent of total harvest to 12 percent of total harvest on the Tongass National Forest (Mehrkens 2006).

Unfortunately, the over-harvesting of higher-valued species in the past contributes to the current overabundance of lower-valued species noted above and has not helped Alaska's competitive disadvantage in an increasingly competitive market place.

**TABLE 1.**  
**Comparison of Competitiveness Factors in Southeast Alaska and Coastal British Columbia Versus the Pacific Northwest and Interior British Columbia**

Table 1 shows the competitive disadvantages faced by the timber industry in Southeast Alaska.

Characteristic	Southeast Alaska and Coastal British Columbia	Pacific Northwest and Interior British Columbia
Harvests	Primarily old growth (variety of log sizes & qualities)	Younger, second or third growth (more uniform log size and quality)
Location	Remote with long waterborne distances to major markets	Near major markets and/or land based transportation systems
Infrastructure	Poor	Good
Industry Structure	Smaller, outdated and less efficient mills	Larger, modern and more efficient mills
Capacity Utilization	Low	High
Product Mix	Minimally processed lumber	Dimension lumber and engineered wood products
Markets	Remanufacture and specialty markets	Construction, repair and remodel (residential and nonresidential)
Capital Expenditures	Low	High
Local markets for low value logs and mill residues	Poor	Good

Source: Adapted from Crone (2007).

**TABLE 2.**  
**A Comparison of Timber Processing Capacity and Use Between Alaska and its Regional Competitors, 2003**

Alaska is obviously a minor wood processing region because it has both the smallest wood processing capacity and the least utilized capacity amongst its regional competitors.

State or region	Capacity (million board feet)	Percent utilized
Alaska	370	9
Oregon	5,077	87
Washington	3,863	80
Interior BC	11,900	100
Coastal BC	3,200	72

Sources: Keegan et. al (2006), Brackley et al. (2006), Crone (2007).

### Competitive Disadvantages Manifest in Low Capacity Utilization

Another implication of being a high cost producer is that the Southeast Alaska sawmill industry has not operated at installed mill capacity for at least 25 years.

Table 2 displays and contrasts installed timber processing capacity as well as actual use for Alaska and four regional competitors. As Table 2 shows, Interior BC, Oregon and Washington have operated at high capacity utilization rates while Southeast Alaska only utilized 9 percent of its installed mill capacity. Alaska is obviously a minor wood processing region because it has both the smallest wood processing capacity and the least utilized capacity (Crone 2007).

The underutilization of capacity is an indicator of the uncompetitiveness of the Southeast Alaska industry (Crone 2007). As noted by the Southeast Regional Timber Industry Task Force (1997):

The characteristics of global timber markets, the costs and value of the timber resources in the region, and the comparative costs of doing business in Alaska all play a key role



PHOTO COURTESY D. PERKINS

in determining the extent to which timber can and will be processed in the region...it is highly unlikely that any products would be manufactured if selling values did not at least cover the cost of production. Therefore, production costs essentially dictate the “bottom line” dollar value that must be received for products before they will be manufactured. For the wood products industry in Alaska, this “bottom line” is very high relative to costs in other timber producing regions (1997: 30).

Figure 4 displays Southeast Alaska sawmill capacity utilization estimates from 1981-2005. For most of these years sawmills in Southeast Alaska have operated at less than 50 percent of capacity, with utilization peaking at 72 percent in 1991, before dropping to less than 10 percent utilization in more recent years.

Although the timber industry and its allies may argue that installed mill capacity is “the” determinant of demand, mill capacity is a poor proxy for

Stacks of lumber cut from trees in the Tongass National Forest await shipment to the Continental U.S. Japan was once a major market for Tongass timber, but today 78% of the market for Alaska wood products is domestic.

▼  
 A shortage of supply is not the reason for mills operating below capacity. Rather, the backlog of uncut timber indicates a timber industry that is unable to deliver a competitively priced product to markets.  
 ▲

estimating stumpage demand. As shown, sawmills in Alaska never run at full capacity. Further, relying solely on mill capacity ignores the role of regional competition and the high costs of timber production in Alaska. Economic factors that could be included in an analysis of timber demand include housing starts and building codes, consumer preferences, interest rates, and prices of intermediate and final wood products. Relying on installed mill capacity as the sole predictor of timber demand has led to a systematic misspecification and overestimation of stumpage demand for timber on the Tongass, as well as other national forests.

While timber industry advocates argue<sup>7</sup> that Tongass timber supply levels are the primary reason that mills have operated well below capacity, an examination of recent timber sales on the Tongass indicates that this is not the case. An analysis of recent timber sales shows that more than a quarter of the timber sales, accounting for nearly half of the volume offered by the Forest Service, received no bids (Mehrkens 2005a). The collapse of the Japanese export market, as well as the high costs of logging and production, obviously play more important roles than the supply of timber from the Tongass.

Figure 5 displays the volume of timber harvested and the backlog of uncut timber under the Tongass Independent Timber sale program (Mehrkens 2006). This figure clearly

indicates the large volume of uncut timber under contract to the timber industry, indicating a supply greater than the demand. In 1996 the volume harvested was less than a third of the uncut volume under contract and by 2001 harvest volume was less than an eighth of the volume under contract (Crone 2007).<sup>8</sup>

Clearly a shortage of supply is not the reason for mills operating below capacity. Rather the backlog of uncut timber is indicative of an industry that is unable to pay a competitive price for raw material and deliver a competitively priced product to markets (Crone 2007). Crone (2004) summarizes the challenges faced by timber producers in Alaska:

When the pulp mills closed, the marginal position of the Alaska wood products manufacturers in the cyclical and global wood products industry became more evident and acute. As high-cost producers, Alaska manufacturers feel the effects of market downturns first. With the pulp mills no longer ready markets for the mill residues and chips, Alaska firms must now compete with more efficient and lower cost suppliers from other regions in the global marketplace (2004:52).

In addition to the backlog of uncut logs already under contract, the Forest Service continues to offer more timber

<sup>7</sup> See for example Graham (8/18/2006), Venables (8/23/2006), Murkowski 2006 <http://www.frankmurkowski.com/pdf/TongassTimberMOU.pdf>.

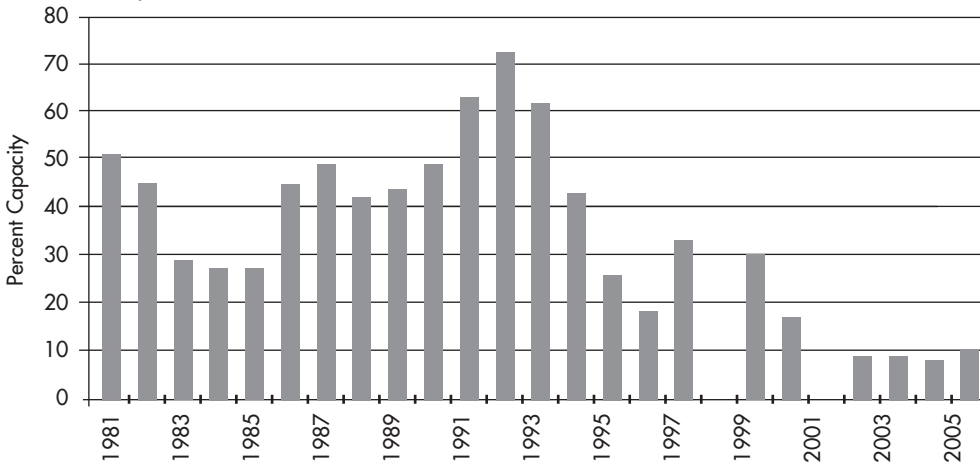
<sup>8</sup> The cancellation of contracts shown in Figure 5 was a result of Public Law 108-108 (legislative relief) which cancelled 21 timber sales, and the Gateway Forest Products bankruptcy in 2002 which resulted in the cancellation of 10 timber sales. The Gateway veneer plant in Ketchikan opened in 2001 with great optimism. Technical difficulties and the drop in lumber prices led the company to file Chapter 11 bankruptcy later that year and cease operations in 2002 (Crone 2007). There is a well established history of letting timber operators off the hook by cancelling contracts and reappraising timber at lower stumpage prices. The ever reoccurring theme is large federal subsidies to oversupply timber and then federal bailouts to buy the timber back. Taxpayers lose in several ways: first by selling the timber at a loss, second by buying the timber back, third by re-selling the timber at another loss, and fourth by losing the non-market values associated with old growth forests.

for sale than industry buys. It appears that taxpayers could save money by reducing the budget used to prepare

timber sales in order to reduce the supply offered down to a level consistent with the low demand from purchasers.

**FIGURE 4.**  
**Southeast Alaska Sawmill Capacity Utilization Estimates, 1981-2005**

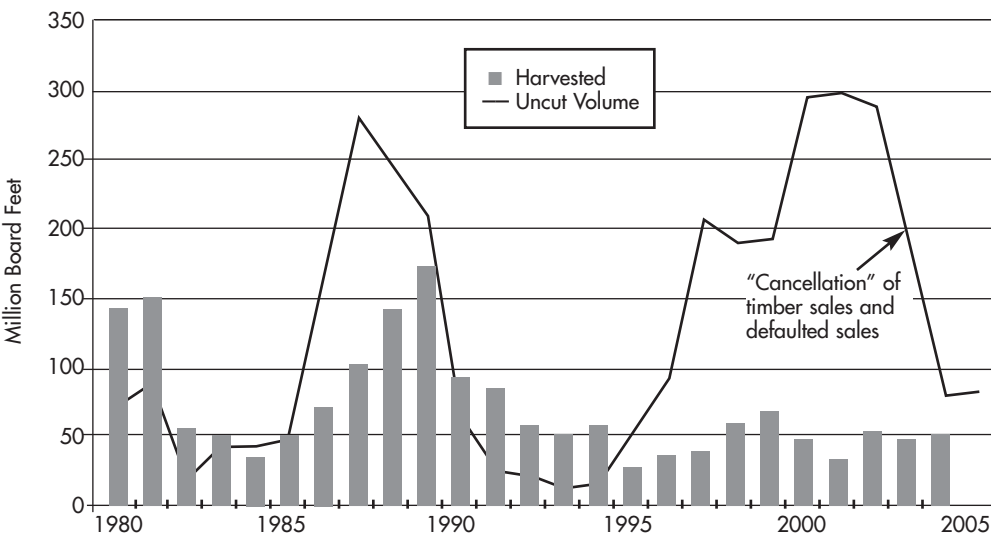
Sawmills in Southeast Alaska have never operated at full capacity, with current utilization rates less than 10 percent.



Sources: Morse (2000); Parrent (2006), Crone (2007). Note: Data not available for 1998 and 2001.

**FIGURE 5.**  
**Tongass Timber Sales, Harvested and Volume Uncut Under Contract**

Figure 5 clearly indicates that since 1996 the timber industry has had large volumes of uncut timber under contract, indicating a "surplus" of supply.



Source: Mehrkens (2006).

### Recent Trends

Before formally critiquing the Brackley et al. (2006) model, we present recent trends to provide context and improve the understanding of our critique. In this section we examine trends in lumber exports to Japan, as well as trends in stumpage prices, subsidies,

and timber jobs associated with the Tongass timber program.

### The Alaskan Market for Lumber Exports to Japan has Collapsed

In years past, Japan was the primary export destination for Southeast Alaska wood products. However, the amount of lumber exported to Japan from Alaska has decreased significantly – from about 400 million board feet (mmbf) in 1973 to less than 25 mmbf in recent years. Figure 6 displays this dramatic decline. One could hypothesize that the drop in Japanese exports was a result of constraints on the supply of logs for the local mills. However, as shown in Figure 5, supply has not been constrained – rather the volume of uncut timber under contract has exceeded the amount logged each year since 1996.

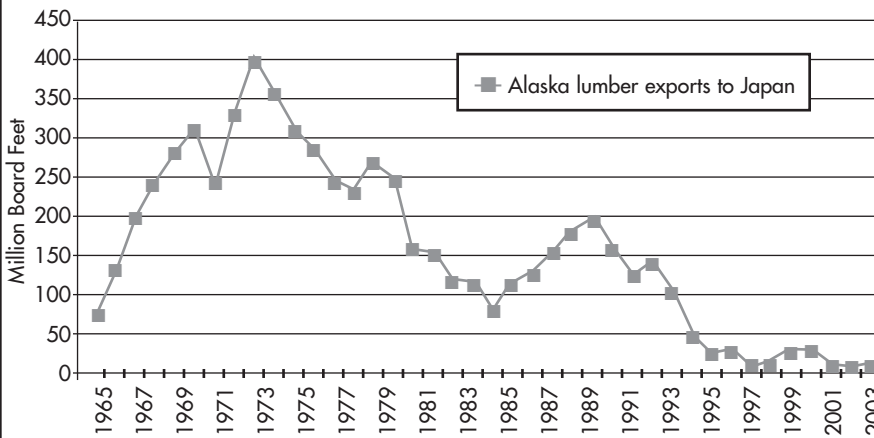
Crone (2007) documents the many reasons for the decrease in Japanese softwood lumber imports from the PNW, Coastal BC, Alaska and/or North America in general (Taylor and van Leeuwen 2002, Eastin and Braden 2000, Anderson and Doig 2004, Daniels 2005, and WPIAC 2006). The reasons include the Asian economic crisis which began in 1997, reductions in Japanese housing starts, the Kobe earthquake in 1995 which resulted in changes in Japanese building codes, a decline in the Japanese sawmill industry, and the substitution of radiata pine from the southern hemisphere and whitewood from northern Europe. Probably most importantly for both Southeast Alaska and Coastal BC suppliers was the shift in demand from green lumber to kiln-dried lumber and engineered wood products (Crone 2007).

### The Domestic Market is the only Remaining Market for Alaska Lumber

Since at least 2000, the majority of softwood lumber produced in Southeast Alaska has gone to domestic markets in Alaska and the Continental U.S. Figure 7

**FIGURE 6.**  
**Total Alaska Softwood Lumber Exports to Japan, 1965-2004**

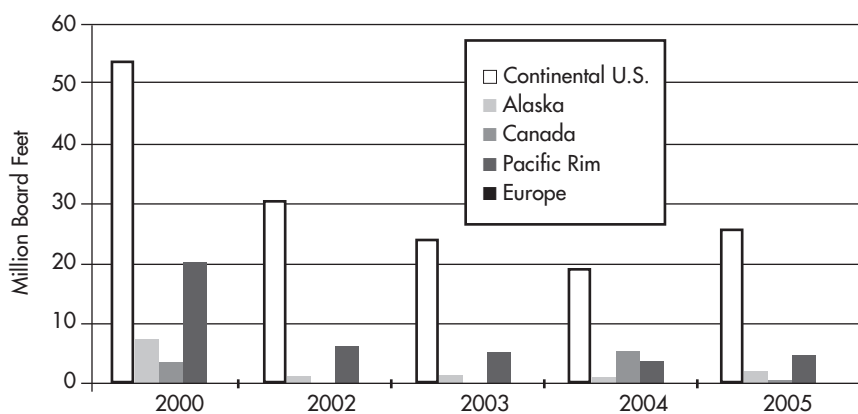
Figure 6 shows the collapse in the lumber export market to Japan.



Sources: Brooks and Haynes (1994); Brackley et. al. (2006), Crone (2007).

**FIGURE 7.**  
**Volume of Southeast Alaska Lumber Production by Destination, 2000 and 2002-2005**

Figure 7 shows that domestic markets are the primary market for lumber produced in Alaska.



Source: Kilborn et al. (2004); Parrent (2004, 2005, and 2006); Crone (2007).

indicates the primary market for Southeast Alaska producers is the domestic market in the Continental U.S. From a modeling perspective, accurate forecasting requires basing projections of the demand for Southeast Alaska wood products on projected changes in the major market to which these products are going—domestic markets (78%)—rather than focusing on projected changes in a minor market—the Pacific Rim (15%) (Crone 2007).<sup>9</sup> Because most of Alaska’s lumber goes to domestic markets it makes more sense to base Tongass lumber forecasts on economic factors influencing domestic markets. Brackley et al. (2006) did not do this. Rather their model assumes domestic demand is determined by the Pacific Rim market – which is akin to assuming that the “small tail” of Japanese/Pacific Rim demand wags the “big dog” of Continental U.S. demand.

### The Willingness of Industry to Pay for Tongass Trees is Declining

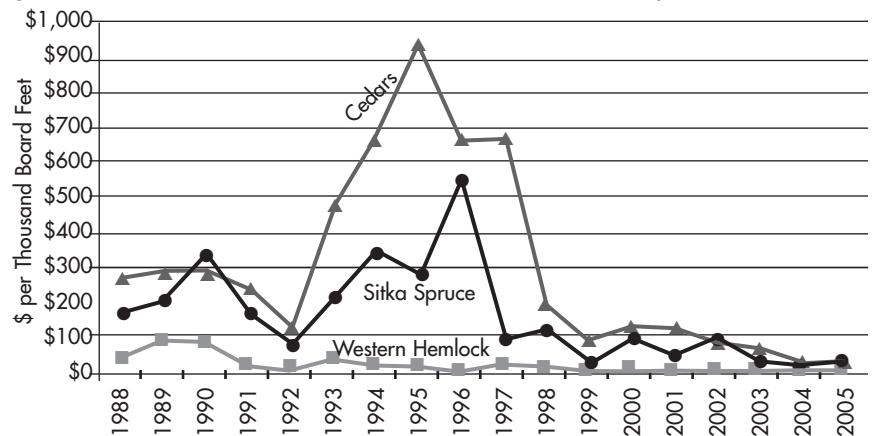
Stumpage prices refer to the value of standing timber (timber “on the stump”), and is one proxy for timber demand from a taxpayer’s perspective. Stumpage prices are a reflection of the willingness of purchasers to pay for public stumpage. While changes in costs and in final product demand also affect future stumpage values, past willingness to pay for stumpage can be used as one indicator of the future willingness of industry to pay for trees on the Tongass National Forest. Robertson and Brooks (2001) analyzed the stumpage values for individual species in Southeast Alaska. The results revealed high values for Alaska yellow cedar, lower values for Sitka spruce, and the lowest values for hemlock.

Figure 8 shows average (nominal) stumpage prices for cedars (western red

FIGURE 8.

### Alaska Region Forest Service Stumpage Prices 1988-2005

Figure 8 shows the rise and fall of stumpage prices for all species sold from the Tongass National Forest. Prices are nominal and have not been adjusted for inflation.



Source: Warren (2000, 2006); Crone (2007).

cedar and Alaska yellow cedar combined), Sitka spruce and western hemlock (Crone 2007). The low stumpage prices for hemlock, combined with the large volume of hemlock on the Tongass (see Figure 2) underscore the economic disadvantages faced by Alaskan sawmills.<sup>10</sup> Even stumpage prices for old growth Sitka spruce and yellow cedar, the “money trees” that historically have helped subsidize mill operations, have collapsed. The willingness of timber purchasers to pay for public timber peaked in the mid-nineties and has been declining since the Japanese export market collapsed. Given the decline and currently low stumpage prices for all species, it is hard not to conclude that demand for Alaskan timber is low, especially for hemlock trees.

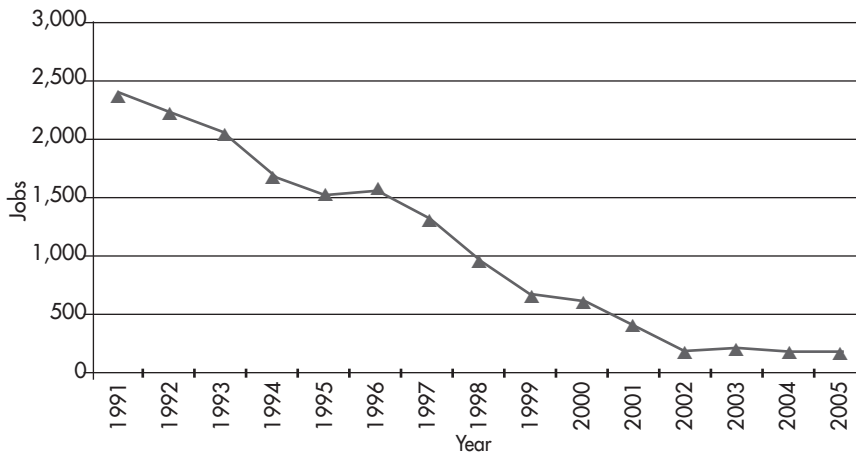
### Timber Jobs are Declining

Figure 9 displays the number of jobs in the logging and wood products sectors of Southeast Alaska, estimated by the Forest Service to be associated with Tongass timber harvests for the years

<sup>9</sup> These percentages represent the percentage of the total volume produced over the past four years going to each region.

**FIGURE 9.**  
**Tongass National Forest Timber Related Jobs 1991-2006**

Figure 9 shows the steady decline in timber jobs associated with the Tongass timber program. Timber jobs have declined despite sawmills having a surplus of uncut timber under contract.



Source: Crone (2007).

1991-2005. Although industry had an ample supply of timber available during this time, the jobs associated with Tongass timber steadily declined until 2002. Since 2002, these jobs have remained relatively stable at this new lower level (Crone 2007).

This pattern suggests that it is not labor supply that limits capacity utilization or timber exports. If there were robust demand for Southeast Alaska timber, and/or if the regional industry were otherwise competitive, idle mill capacity could productively be brought online by hiring former workers.

**Taxpayer Subsidies for Road Building are Increasing**

Much of the recent increase in Tongass timber program expenditures has come in the form of construction or reconstruction of logging roads. On the subject of accelerated road building in recent years Mehrkens (2005b) writes, Even though timber demand continues to fall to record low levels (in the last fifty years), the Forest Service is accelerating road building activities. In fact the 2005 expenditures for roads exceeded that of 16 years ago when timber demand was 7 times greater. (emphasis in the original) (2005b:4)

Similarly, the Southeast Alaska Conservation Council (SEACC 2007) writes,

The Forest Service spent \$2.7 million dollars on the Midway Road on the Tongass. The only use of the road is to access unsold old-growth timber for logging. The Forest Service has tried to sell the timber twice, once before building the road and once after building the road. Both times the Forest Service failed to find a buyer (2003:8)....

Were the Southeast Alaska forest products industry competitive with sawmills in other regions, subsidies for road-building would not be necessary; sales of the industry's products would generate revenue sufficient to cover the costs of harvesting logs, including road construction.

<sup>10</sup> Stumpage price trends have also been influenced by provisions for emergency rate re-determinations and federal buybacks (usually a choice to walk away from a timber sale or receive a stumpage price reduction).

## The Timber Demand Model for the Tongass is Obsolete

The competitive disadvantages combined with stiff regional competition and the collapse of the Japanese market strongly suggest that it is highly unlikely that demand for Tongass timber will increase in the near future. So how did the Forest Service arrive at its recent projections for increasing demand? In short, the agency relied on a model that failed to account for, and is incapable of accounting for, the change in market conditions for Alaskan timber.

In this section we critique the timber demand projections developed by Brackley et al. (2006) for use in the Tongass forest planning process. We first present the demand projections by Brackley et al. (2006), summarizing some of the weaknesses of the approach. We then begin our formal critique by examining the implicit assumptions of the timber demand model – none of which are valid today. We end our critique examining the explicit assumptions adopted by Brackley et al when using the model in their 2006 analysis – many of which we question.

### Forest Service Estimates Demand Increasing, Despite Evidence to the Contrary

Despite the recent changes in Alaska timber markets, Brackley et al. (2006) used a slightly modified version of the Brooks and Haynes model to develop demand projections based on four scenarios. Figure 10 displays the declining demand for Tongass timber combined with the four increasingly unlikely demand projections by Brackley et al. (2006). Each scenario projects that demand will increase over time, and that estimated demand will grow more with each subsequent scenario.

**Scenario 1**, the Limited Lumber Production scenario. Scenario 1 assumes

sawmill capacity in Alaska remains unchanged, but that production will increase from current levels of about 34 million board feet (mmbf) per year to 48 mmbf per year in response to exports to the Pacific Rim and domestic market demands.

**Scenario 2**, the Expanded Lumber Production scenario. Scenario 2 presents an estimated demand of 153 mmbf per year. It is similar to Scenario 1 but assumes even greater production from existing mills.

**Scenario 3**, the Medium Integrated Industry scenario. Scenario 3 assumes that one new mill will be built to utilize sawmill residues and the abundant supply of low-grade logs in Southeast Alaska. The demand estimated in Scenario 3 increases to 204 mmbf per year.

**Scenario 4**, the High Integrated Industry scenario. Scenario 4 assumes that two new mills will be built in Southeast Alaska, resulting in an increase in demand to 370 mmbf per year. The

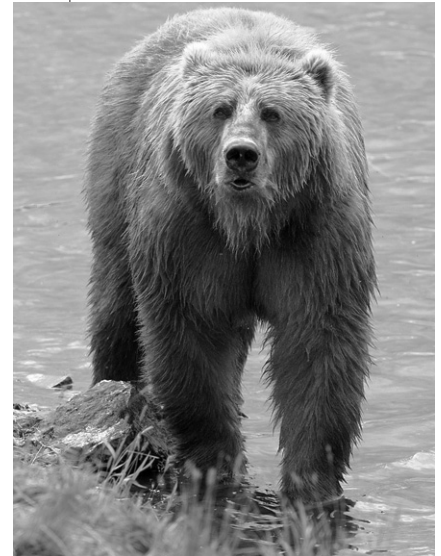
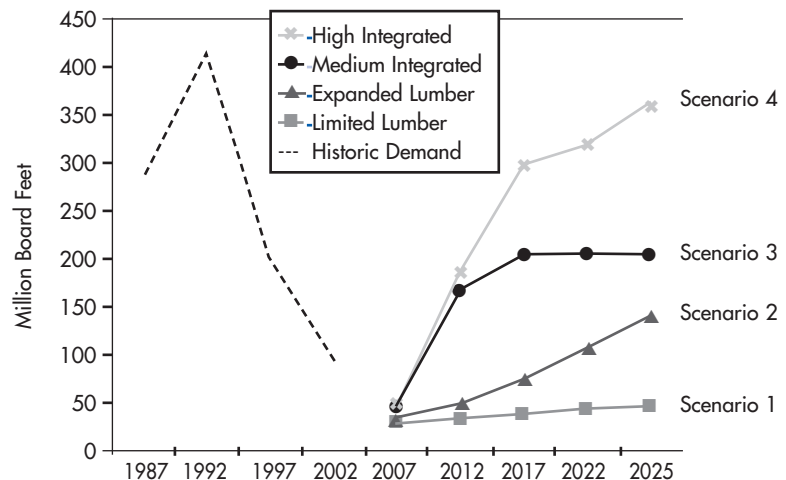


PHOTO BY STEVE HILLEBRAND/USFWS

The Tongass National Forest supports a thriving population of brown bears and many other species that have disappeared or whose populations have declined elsewhere in the world. Many of these Tongass species depend on protected roadless areas, unlogged watersheds, and remaining stands of productive old-growth.

**FIGURE 10.**  
**Historical Timber Demand for the Tongass National Forest Combined with Current Projections of Future Demand as Modeled by Brackley et al. (2006)**

Figure 10 shows a precipitous drop in demand since the early 1990s and is in contrast to the dramatic rise in demand projected by the Forest Service projections in each of its four scenarios.



Source: Brackley et al. (2006) (Table 3).

logging level assumed in Scenario 4 is more than 10 times recent logging levels on the Tongass.

To derive the four Forest Service scenarios shown in Figure 10, Brackley et al. (2006) used a model based on historic softwood lumber consumption, production, and imports in Japan from 1965 until 2004. The authors then assumed the model was appropriate for predicting future demand in the Pacific Rim as a whole. The authors further assumed their forecasted demand for the Pacific Rim would directly determine the demand in the Continental U.S. and Alaska – without providing any evidence that such a causal relationship exists. Indeed, the Brackley model does not include a single parameter to model the potential influence of changes in domestic markets (Crone 2007).

Despite the fact that the decline in Tongass timber demand began in the 1970s, all four Forest Service scenarios project a turn-around. We find no evidence to suggest the declining trends will not continue in the future, or that Alaska's competitive disadvantage in timber production will improve. The Forest Service scenarios are highly improbable given no accompanying plans or feasibility studies. To the contrary, past downward trends are most likely to continue.

Brackley et al. (2006) state the following on p. 27, "In the face of the various challenges implicit in scenarios 2 through 4, the outcome resulting from the limited lumber scenario (scenario 1) assumes greater likelihood of occurrence..." With this conclusion in mind, we do not understand why a scenario reflecting the possibility that the demand for Tongass timber might decrease over the next 20 years was not included in the analysis by Brackley et al. (2006). Our review of trends in competing regions and Pacific Rim markets indicates that this is a very real possibility. The lack of alternatives with

decreased demand scenarios must be corrected in order to ensure an adequate and realistic range of alternatives.

### **Implicit Assumptions no Longer Valid**

The model used by Brackley et al. (2006) to forecast timber demand for the Tongass is essentially the same model used by Brooks and Haynes twelve years earlier. When the model was originally developed, more than 90 percent of Alaska's lumber went to Japan. Now, however, most Alaskan lumber is shipped from Alaska to domestic markets, drawing into question the credibility of using the old model based on Japanese lumber demand to estimate demand in domestic markets.

The continued use of the Brooks and Haynes (1994) model relies on three implicit assumptions:

1. no structural changes have occurred in markets for Alaska timber (primarily Japan);
2. no structural changes have occurred in the regions competing with Alaska for Japanese markets; and
3. no changes have occurred in the mix of the forest products industry in Alaska.

Not one of these assumptions is valid. Structural changes have occurred, as Japan is no longer the primary export market. Regional competitors in the Pacific Northwest and Interior British Columbia have invested in efficient mills and are producing low cost, uniform supplies of high value species. And the mix in forest products has changed as the two major pulps mills in southeast Alaska that utilized the abundant low-value hemlock resource, shut down in 1993 and 1997.

The Forest Service itself, citing Brackley et al. (2006), notes the degree to which the world has changed for Southeast Alaska's timber industry since

Brooks and Haynes developed their model:

There have been major shifts in the markets served by Alaska sawmills over the past decade. Up to 95 percent of production was exported to Japan prior to 1997. Exports have fallen since 2000 and the volume shipped to domestic markets has ranged from 60 percent to 83 percent of total production, with shipments to domestic markets primarily for sale as shop lumber or niche specialty products.... Changes in demand and prices have had dramatic effects on the Southeast Alaskan timber industry and on the profitability of the remaining facilities (Tongass DEIS, 2006 p.3-414).



PHOTO COURTESY SITKA CONSERVATION SOCIETY

And Brackley et al. (2006) acknowledge the challenge in forecasting future demand when markets are dynamic and economic conditions change over time:

During the conduct of this project, it became obvious that changing conditions in Alaska and world markets are rapidly making the existing model and approach obsolete. Future attempts to project demand for national forest timber in Alaska will require new methods and additional information (2006:28).

We contend that the model and approach used by Brackley et al. (2006) is already obsolete and therefore should not be used to project demand for timber on the Tongass. Rather than delay developing new, more reliable methods, the agency should develop those methods for use in the current forest plan, especially in light of the federal court's recent decision on the Tongass timber demand.

### **Timber Demand Projections Fatally Flawed Due to Faulty Assumptions, Incomplete Model**

While we have shown that the implicit assumptions of the Brooks and Haynes 1994 model are no longer valid, the fatal flaws in the Forest Service's timber demand analysis (Brackley et al. 2006) are even more egregious. The flaws derive from several faulty assumptions:

- The Forest Service assumed that the Pacific Rim, particularly Japan, continues to drive demand for timber from Southeast Alaska and that Pacific Rim markets can be modeled based on historic Japanese markets.
- The Forest Service assumed that demand in the Continental U.S., which has for several years been the largest component of demand for Southeast Alaska timber, is directly derived from the demand estimated for the Pacific Rim.
- The Forest Service assumed new trends that are inconsistent with historic trends, ignoring the

This Forest Service cabin is an example of the many popular recreational uses in the Tongass that would benefit from greater management attention and funding.

competitive disadvantage of the Alaskan timber industry.

- The Forest Service assumed that new, large mills will come on-line soon in Southeast Alaska.

We consider each of these flaws in turn.

**The Japanese (And Pacific Rim) Market Is No Longer Significant**

The Brackley model does not account for the factors behind the precipitous decline in demand for Southeast Alaska timber in the Pacific Rim itself. As discussed, exports of lumber from Alaska to Japan have declined precipitously – from more than 400 mmbf in 1973 to less than 25 mmbf today. In the previous demand projections prepared by Brooks and Haynes (1990, 1994, and 1997) Japan was the dominant market for softwood lumber sawn from Tongass timber. For this reason, forecasting the total demand for Tongass timber based on expected softwood lumber consumption, production and imports in Japan made sense. Given the radical changes that have occurred in the Japanese market and the dramatic decrease in the proportion of Southeast Alaska lumber that flows to that market, however, basing forecasts on the Japanese market no longer makes sense.

That said, and while the Japanese market has been the most important part of the overall Pacific Rim market for Tongass timber, it is not the only component of the market. However, it is not reasonable to assume, as Brackley et al.(2006) do, that the remainder of the Pacific Rim market is sufficiently like the bygone Japanese market to justify applying the same outdated model of Japanese timber demand to the entire Pacific Rim.

Pacific Rim countries such as China and Korea have very different softwood lumber consumption and import patterns than Japan. U.S. exports to Japan of the lumber types Alaska produces<sup>11</sup> are very different than U.S. exports of these lumber types to other Pacific Rim countries such as China, South Korea, Taiwan and Hong Kong. In other words, Pacific Rim wood product imports may increase, but this does not necessarily imply that Pacific Rim demand for Southeast Alaskan wood products will increase (Crone 2007).<sup>12</sup>

Nevertheless, Brackley et al. (2006) assume that the Brooks and Haynes model, developed for the Japanese export market, is appropriate for predicting future softwood lumber consumption, production and imports in all Pacific Rim countries. In effect, this assumption means that the errors already present in the outdated Brooks and Haynes model as applied to Japan are multiplied when applied to the entire Pacific Rim.

Domestic (Continental U.S.) demand is not simply a multiplier of Pacific Rim demand. Inaccurate projections of Japanese and Pacific Rim demand are questionable in and of themselves. Their inaccuracy looms even larger, however, because Brackley et al. (2006) assume that demand in the Continental U.S. is a simple multiple of Pacific Rim demand.

Specifically, Brackley et al. (2006) first assumed that the model based on Japanese exports would be sufficient for estimating Pacific Rim exports. Brackley further assumed that Pacific Rim exports would account for 17 percent of future demand for Tongass timber, and that domestic demand would account for the remaining 83 percent. To derive domestic demand estimates, it appears that Brackley et al. (2006) assumed that

▼  
The model used to forecast timber demand for the Tongass relies on assumptions, none of which are valid today.  
▲

<sup>11</sup> These include hemlock, hem-fir, Sitka spruce, western red cedar and Alaska yellow cedar.

<sup>12</sup> Brackley et al. (2006) specifically mention China as a likely source of future demand for wood products from the Tongass. However, they provide no analysis or data to support this assertion.

Alaska shipments of lumber to domestic markets would be approximately 4.88 times (83% / 17%) the estimated amount of lumber exported to the Pacific Rim. For example, if the Brackley model assumes 5 mmbf of lumber exports to Pacific Rim countries, they further assume that Alaskan lumber demand in the United States will equal 24.4 mmbf ( $5 * 4.88 = 24.4$ ). In this example, total demand would equal 29.4 mmbf ( $24.4 + 5 = 29.4$ ).

In other words, the model does not represent any sort of direct relationship between factors and trends in the continental U.S. economy or forest products industry that might determine that region's demand for Southeast Alaska timber. Instead, the Brackley et al. model simply multiplies the (already overestimated) Pacific Rim demand by a fixed multiplier and calls the result the "derived demand" in the Continental U.S.<sup>13</sup> In contrast to good science, the Forest Service demand projection is a simple assumption based on no data analysis or supporting evidence. As Crone (2007) notes, "the upward influence on forecasted demand from such a simplistic and static assumption is obvious."

In a letter dated June 4, 2006, Castillo and regional staff on the Tongass National Forest raised similar issues to the ones we raise here. Forest Service regional staff asked the following relevant question (Castillo, 2006, Question 5, page 2),

In order to explain your projections, we need you to explain why you felt that the 17 percent export share would drive, or determine, demand for the 83 percent of wood going to domestic markets.

Brackley did not answer the question in his response (Brackley, June 30, 2006), nor did he offer an explanation on why he believes it is possible to estimate the domestic market as a simple multiplier of projected export markets.

Castillo and staff followed up their request with another one (Castillo, 2006, Question 5, page 2),

...please explain why you did not include independent variables related to domestic demand in the model, available from such sources as the RPA reports, and why this wasn't necessary.

Once again, Brackley does not respond to the request from regional Forest Service staff in any direct or obvious way.

Based on our review there is no logical or economic reason for assuming domestic demand for Alaskan lumber will be approximately five times the demand from the Pacific Rim countries. Brackley's lack of response and explanation only serve to support our conclusion.

### **Forest Service Assumed Trends That Are Inconsistent With Historic Trends**

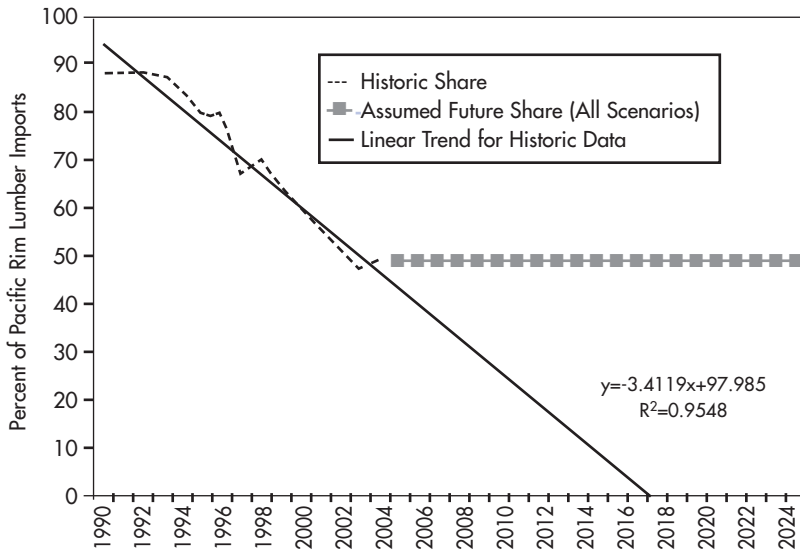
Despite overwhelming evidence for the competitive disadvantage of Alaska timber producers, Brackley et al. (2006) implicitly assume that Southeast Alaska producers will be competitive in Pacific Rim and domestic markets. In fact the Forest Service boldly assumed that Alaska's timber industry will increase its market share in domestic markets over the next 20 years.

Brackley et al. (2006) state that their report "projects the demand for Alaska national forest timber by using a trend-

<sup>13</sup> We note that the Forest Service misuses the economic term "derived demand" to refer to U.S. demand for Tongass timber when that demand is "derived" from Pacific Rim demand in only an arithmetic sense. In its correct economic meaning, "derived demand" is the demand for a factor of production that is *derived from* the demand for a finished product. For example, there is a demand for lumber that is derived from the demand for housing and furniture. There is no sense in which Tongass timber consumed in the U.S. is a factor of production for Tongass timber consumed in the Pacific Rim.

**FIGURE 11.**  
**North American Share of Pacific Rim Softwood Lumber Imports**

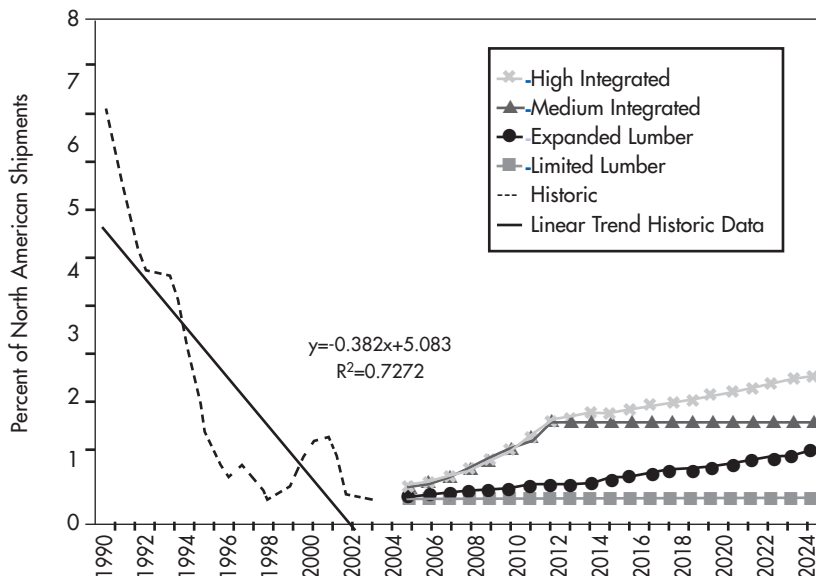
Figure 11 shows a declining historic trend in North American exports to the Pacific Rim, and the assumption by the Forest Service that the trend would stop in the future and that market share would stabilize at 49 percent.



Source: Brackley et al. (2006); (Table 5A).

**FIGURE 12.**  
**Alaska Share of North American Shipments to Pacific Rim  
Historic and Assumed Future Shares**

Figure 12 shows the historic downward trend and the Forest Service assumed upward trends in Alaska’s share of the North American lumber exports to the Pacific Rim.



Source: Brackley et al. (2006); (Table 5A).

based analysis.” The authors, however, present no analysis of trends in historical data, and in fact seem to have assumed future trends for key variables that in many cases run counter to historic trends. Below we have completed our own analysis of trends using data presented in the Brackley et al. (2006) report to illustrate this point.

Brackley et al. (2006) also state, “After the fact, estimates of derived demand<sup>14</sup> can be compared with historic data (actual volumes of timber harvested) to test the reliability of projections.” After reading the report, we question whether the authors ever completed such a test of reliability. We created the following figures comparing historic data with forecasted data to help illuminate our concerns, and fill an information void on the reliability of the forecasts, many of which were assumed to be true by Brackley et al.

As Figure 11 shows, North American lumber shipments dropped from 88 percent to 49 percent of Pacific Rim lumber imports between 1990 and 2004. The linear trend line, based on the historic data, suggest the loss of market share will continue. Brackley et al. (2006), however, assumed that the downward trend in market share will not only stop but would hold constant at 49 percent for the next 20 years. A more conservative and thorough analysis – one consistent with an analysis of market trends – would have included scenarios in which the downward trend continues. It is important to re-emphasize that the 49 percent share for the next 20 years is just an assumption by Brackley et al. (2006), and does not appear to be based on any data, quantitative analysis or modeling effort.

Figure 12 shows the historic downward trend in Alaska’s share of the North American lumber export market to the Pacific Rim, as well as the future trends assumed by the Forest Service.

<sup>14</sup> Ibid.

Once again, Brackley et al. (2006) assume that a downward trend will end. In this case, Brackley's Limited Lumber scenario assumes market shares will hold constant at current levels. Even more optimistically, Brackley's other three scenarios assume the historic trend will reverse itself and that Alaska will increase its share of the North American lumber shipments to the Pacific Rim. This optimistic assumption is highly unlikely.

As previously discussed, Alaska is a high cost producer, making it very difficult for sawmills in Alaska to gain market share from more efficient mills in the PNW and Canada. Stevens and Brooks (2003) found that Alaska's timber industry is "sensitive to international market conditions, including competition from other North American regions." They further state that Alaska's high manufacturing costs "play a key role in limiting the region's market share in Japan."

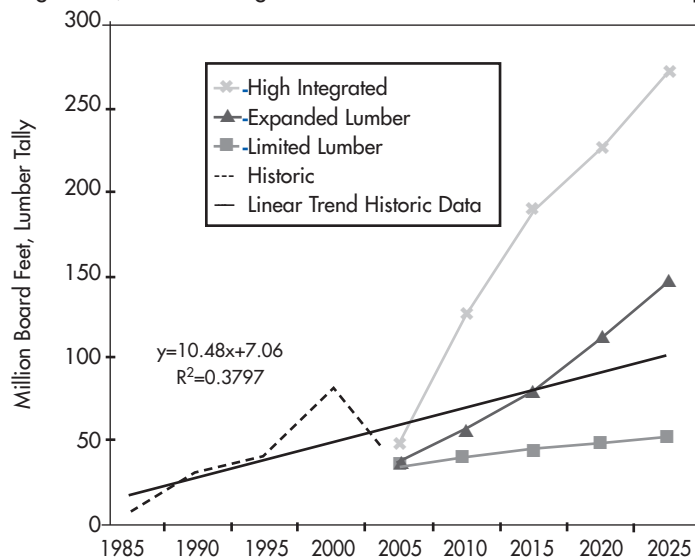
Brackley et al. (2006) assumed Alaska producers would increase market share without any analysis of trends in logging, sawmilling or manufacturing costs to support such an assumption. For example, if the costs of logging and manufacturing in Alaska continue to increase, it will be very difficult for producers to increase market share in a competitive market. As Stevens and Brooks (2003) note, "High-cost producers, such as Alaska, are typically the last-in, first-out suppliers of commodity products that have close substitutes." Increasing market share will be especially challenging for low valued hemlock logs, which compete against substitute logs produced in BC and the PNW.

Brooks and Haynes made a similar mistake in 1994, when they assumed that Alaska mills would gain market share due to the potential impacts of the spotted owl on timber supplies from the Pacific Northwest. Brackley et al. (2006) reflect back to that assumption and state,

FIGURE 13.

### Alaska Shipments to Domestic Markets - Historic Data and Forest Service Projections

Figure 13 shows historic shipments and future projected shipments of Alaskan lumber to domestic markets. Data presented are 5-year averages which are unreliable for estimating trends, as the averages mask the annual variation in lumber shipments.



Source: Brackley et al. (2006); (Table 6).

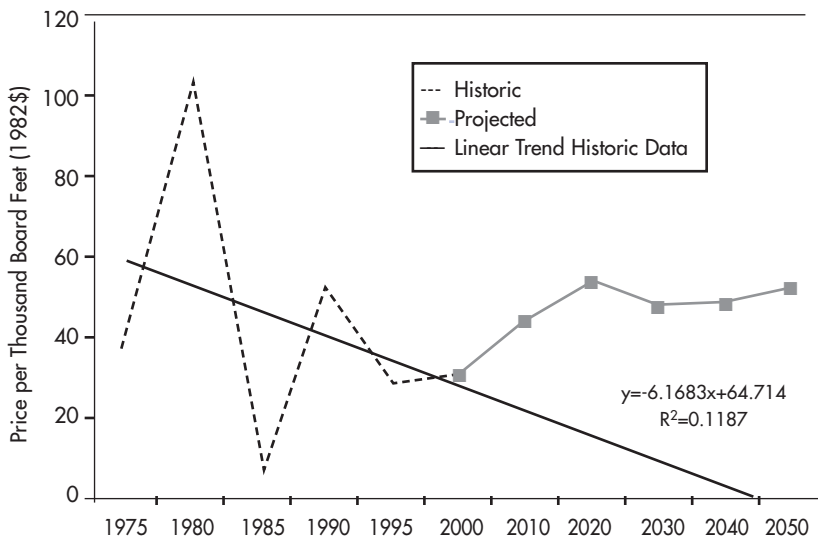
"In hindsight, the 1994 assumptions relative to a modest advantage to Alaska were proved overly optimistic... Canada... remained a significant competitor and quickly gained market share (p. 4)."

Despite similar assumptions having been proved wrong in the past, despite trends suggesting decreasing market shares for Alaska mills, and despite acknowledging the high costs and challenges of increasing Alaska's market share, Brackley et al. (2006) assume the Alaskan timber industry will increase market shares in both the Pacific Rim market and domestic markets.

Figure 13 shows historic lumber shipments from Alaska to domestic markets as well as Forest Service projections of increased shipments. Lumber shipments to U.S. domestic markets increased from around 6 mmbf in 1985 to 80 mmbf in 2000, before dropping to about 34 mmbf in 2005. All four Forest Service projections, however,

**FIGURE 14.**  
**Stumpage Prices Tongass National Forest - Historic and Projected**

Figure 14 shows an historic downward trend and projected increasing trend for stumpage prices on the Tongass, averaged for all species and weighted by the volume harvested. Prices are real and have been adjusted for inflation.



Source: Brackley et al. (2006), (Table 7).

assume that Alaska lumber shipments to domestic markets will increase, with the High Integrated scenario being the most optimistic.<sup>15</sup> Unfortunately, annual data were not provided by Brackley et al. (2006), and a trend line through 5 year averages is not very meaningful. While Alaska shipments may or may not increase, if domestic markets represent the future for Alaskan lumber mills, then demand should be estimated with a model that accurately represents the domestic lumber market.

As noted previously, as the Japanese lumber export market collapsed, an increasing percent of Alaskan lumber was shipped to domestic markets. In 1990, only 5 percent of the lumber was sent to domestic markets; by 2004, 69 percent of Alaskan lumber was shipped to domestic markets (Brackley et al. (2006): Table 5B). Brackley et al. (2006) believe that

domestic markets will continue to be the major outlet for Alaskan lumber, and assume that the domestic share of the Alaskan lumber market will stay at 83 percent for the next 20 years.

Given the collapse of the Japanese lumber export market, it is reasonable to assume that future demand for Alaskan timber will be from the domestic market. It is not reasonable, however, to assume that the overall domestic demand for Alaskan lumber will increase or that Alaska's share of U.S. lumber demand will increase. To accurately forecast such an increase in domestic demand for Alaskan lumber requires developing an accurate model that includes economic factors affecting the domestic demand for Alaskan lumber. The Brackley model, however, did not include a single factor for forecasting domestic demand, which is why the model is obsolete and inappropriate for forecasting future demand for Tongass timber.

Nevertheless, Brackley et al. (2006) assume that not only will Southeast Alaska producers be competitive in Pacific Rim and domestic markets, but the industry will be able to increase their market share in these markets over the next 20 years. In fact, a review of the recent history and current situation in nearby regions reveals that the Southeast Alaska wood products industry has many competitive disadvantages that make such an increase in market share highly unlikely.<sup>16</sup>

Stumpage prices refer to the willingness of mills to pay for public timber. Figure 14 compares historic and projected trends in (real) stumpage prices on the Tongass National Forest. Despite stating (page 25) that "The data and projections...suggest relatively constant stumpage prices in the future" the projections by Brackley et al. (2006)

<sup>15</sup> Table 6 in Brackley et al. (2006), from which Figure 13 is developed, does not include separate figures for the Low Integrated scenario. We assume that it also projects rising shipments to domestic markets.

<sup>16</sup> The same is likely true for sawmills in Coastal British Columbia.

assume that real stumpage prices in Alaska will increase from about \$30 per thousand board feet (mbf) in 2000 to nearly \$52 per mbf in 2050. The optimistic projections suggest that stumpage prices in Alaska will increase 73% in the next 50 years while stumpage prices in the Southern U.S. and PNW are expected to increase just 14 percent. Other than an undocumented equation, the authors provide no justification for their forecast of increasing Alaskan stumpage prices. Historic stumpage prices do not support a rising trend for the future. In fact, just the opposite is true. In the past, when stumpage prices did rise above historic low rates, rate re-determinations, federal bailouts or timber sale cancellations typically lower stumpage prices back to the lower rates.

### **Assumed Future Integrated Forest Products Industry Is Unlikely**

Another major flaw in the Brackley et al. (2006) model is its assumption, in the Medium Integrated scenario, that Southeast Alaska will add one major engineered wood product facility in the Medium Integrated scenario in 2008 and, in the High Integrated scenario, a second such facility in 2012. While an abundance of low-valued species and grades would seem to make Southeast Alaska a prime location for manufacturing pulp and engineered wood products, like medium density fiberboard (MDF), the region's competitive disadvantages trump the supply advantage, and the assumption of adding even one of the two assumed mills seems highly unlikely.

Rather than analyze the low return on investment from new MDF facilities, or at least acknowledge the investment risk as a significant deterrent to the start



PHOTO COURTESY US FISH AND WILDLIFE SERVICE

up of any type of new wood products mill in Southeast Alaska, Brackley et al. (2006), simply state, "We assume that investment risk will be acceptable." (p. 15). Given the low level of utilization of existing mill capacity in Alaska, the returns from investing in new, added capacity are low while the risks are obviously quite high.<sup>17</sup> A number of studies have underscored this fact, and the Forest Service has not demonstrated that a Southeast Alaska facility would be profitable given existing costs, prices, and potential end markets.

The most recent attempt to analyze the feasibility of such an industry was a study commissioned by the University of Alaska Fairbanks-Sitka Forest Products program and conducted by Leonard Guss Associates (LGA), Inc. (2005). Crone (2007) summarizes the conclusions of the Guss study, which included an analysis of potential end product markets:

- There is no feasible market in China.
- Given present costs, a Medium

As early as 1919 the problem of market demand for Tongass timber emerged as a challenge for establishing a viable timber industry in Southeast Alaska. Alaska's remote location is one factor, along with the need to transport logs long distances to mills and wood products long distances to markets.

<sup>17</sup> As noted by one reviewer, the reason that no one has built new pulp mills seems to be overall lack of economic viability rather than "investment risk." Lack of viability is more or less a "low or negative mean return on investment" idea. Investment risk is more or less a "high variance of return on investment" idea. The distinction is important because there might be some economic justification for using policy or subsidies to ameliorate the risk of a high-risk/high return project. There is far less justification for using public policy or public money to promote a low-return project, regardless of the risk (Colt 2007).

▼  
 As many have noted, the profitability and sustainable size of the Southeast Alaska wood products industry are directly related to its ability to find a market for the low value species and log grades that make up the majority of the Southeast Alaska timber inventory.  
 ▲

Density Fiberboard (MDF) mill is not economically feasible.

- In order to have a feasible market in Japan, wood costs would need to be 48% lower, freight cost to Japan would need to be 50% lower, energy costs would need to be 40% lower, and resin (a necessary additive) costs would need to be 14% lower than they were in 2005. In addition, capital investment costs would need to be reduced by 32%.

As part of the study, LGA contacted every MDF manufacturer in North America to determine “whether, or under what conditions, they would be interested in participating in some way in this mill, either by investment, or selling the output or both.” Not a single company expressed any interest in participating via investment or marketing.

Regarding the competitiveness of an Alaskan MDF plant specifically:

- The Alaska market is not big enough to absorb the production of a panel plant and world markets are too “cheap” (i.e., Alaska would likely be a high-cost producer) (Parrent 2000, p.99).
- There are several types of engineered wood products that Alaskan manufacturers can produce. Given the state's cost structure it would not be feasible to compete with lower cost producers in developing countries. Therefore it is not recommended that Alaskan manufacturers produce MDF or plywood, which is dominated by producers in Southeast Asia. (Braden et al 2000.)

Similar poor returns were identified for potential investment in ethanol production in Alaska. While conditions

today may be improved, Brooks and Haynes (1997:16) wrote the following in 1997:

There have been several recent suggestions about alternative industries based on the hope that they might increase the demand for timber (especially National Forest timber) in Southeast Alaska. One of these suggestions is a possible ethanol plant in Southeast Alaska that will use 35 million board feet per year (roundwood equivalent) of low-grade logs (or mill residues). Although economic feasibility will depend on capital availability and product prices, such a plant may find it difficult to compete with the export market for chips. Currently, chip export prices are about twice what can be paid for feed stock for an economically competitive ethanol plant, given current market conditions.

Trainum (2000) reviewed two studies commissioned by Sealaska Corporation to examine the feasibility of a wood-to-ethanol facility in Southeast Alaska.<sup>18</sup> He found serious problems with the economic feasibility of the proposed facility. In a summary of his review he states,

As someone who makes a living investing in ethanol plants around the country, I would advise any investor or lender to seriously consider the numerous, significant and unresolved project viability concerns before pouring money into this plant....According to my calculations, using a current interest rate, this plant will fail to make a profit.

After a thorough review of the

<sup>18</sup> These studies are “Southeast Alaska Biomass to Ethanol Facility Design and Financial Evaluation,” prepared by National Renewable Energy Laboratory (July 1, 1998) and “Alaska Softwood to Ethanol Feasibility Study” prepared by Merrick and Company (April 12, 1999).

literature Crone (2007) concluded that there are no other studies that have demonstrated that a wood processing facility located in Southeast Alaska could use Alaska's lower value species and grades and be economically feasible.

The importance of having a local market for low value species and grades of timber coming off the Tongass to the profitability of the Southeast Alaska wood products industry is widely recognized. However, since the closure of the region's pulp mills, this market has not developed and there are no prospects on the horizon. As noted above, proposals for wood processing facilities to serve local markets have been on the table for a number of years. Despite these proposals no such facility exists today and based on the above referenced economic feasibility analyses and current conditions in local, regional and global markets, we find no reason to believe that the MDF or other fiber-using plants included in the Brackley et al. (2006) model Scenarios 3 and 4 will or should be built.

As many (including TWS (1986), the Irland Group (1991), Brooks and Haynes (1997), Morse (2000), Robertson and Brooks (2001), Crone (2004), USDA Forest Service (2006)) have noted, the profitability and sustainable size of the Southeast Alaska wood products industry are directly related to its ability to find a market for the low value species and log grades that make up the majority of the Southeast Alaska timber inventory. In their 1997 report, Brooks and Haynes (1997:4) write,

Among the new data and revised assumptions reflected in these projections are the closure of one of Alaska's two pulp mills in 1993 and the closure of the second pulp mill early in 1997. Although proposals have been made for mills that would, in effect, replace at least some of the demand created by these two pulp mills for low-grade saw

logs, utility logs and manufacturing residues, these currently are no more than proposals. Our projections therefore are based on demand for National Forest timber that would be used in manufacturing sawn wood for both export markets and U.S. domestic markets; we also estimated the volume of low-grade saw logs and utility logs that would be harvested and exported or left as logging residues.

In other words, because these mills were only proposals, these authors did not assume that they would be built and did not include them as sources of demand in any of their scenario projections. This was a wise choice as to this day such mills were never built.

The modelers of the current demand projections, Brackley et al. (2006), found themselves in the exact same situation, with nothing more than proposals for such mills. However, they chose to include these non-existent mills in their demand projections. Because we do not believe that the financial return on investment will be acceptable to investors, we believe that the fiber-using facilities included in Scenarios 3 and 4 are unlikely to be built in Southeast Alaska. We agree with the approach Brooks and Haynes (1997) took of not including "proposed" but non-existent mills in their demand projections. This is especially important given the conclusions of LGA (2005) and Trainum (2000), regarding the high probability that such facilities would not return a sufficient profit to justify such investments. The fact that not a single North American producer of MDF expressed any interest in participating in an Alaska MDF plant via investment or marketing is also a strong indicator, from knowledgeable sources, that they view such a facility as a losing proposition (Crone 2007).

**Discussion**

Since the Brackley et al. (2006) report was published there have been several important developments. The two developments discussed here are the current declining conditions in the domestic lumber market and a new log “export” policy of the Forest Service.

**The Domestic Lumber Market is Currently in Decline**

As the market for Tongass timber has shifted from Japan to the U.S. domestic market, a quick overview of the current trends in the domestic lumber market is relevant to the discussion. Domestic lumber demand is predominantly driven by the strength of the U.S. housing market. New residential construction accounts for about one half of the demand for lumber, with the other half coming from repair and remodeling activity (Perez-Garcia et al. 2007).

Two markets of interest to sawmill owners in Alaska are the U.S. Interior

west and Midwest markets. Currently these two markets purchase 60 percent of Washington’s softwood lumber production (Perez-Garcia et al. 2007). The Interior West and Midwest markets are also supplied by U.S. southern and Interior Canadian mills. Lumber consumption in privately owned housing units has declined in the Midwest and West regions of the U.S., the principal markets for Washington sawmills, and theoretically Alaska sawmills.

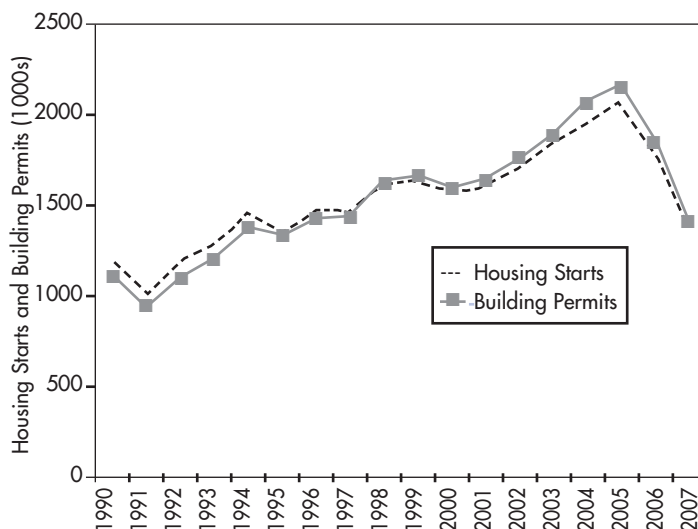
The overall U.S. housing market has weakened substantially in the last few years as it appears that America’s housing bubble has popped. Nationally, sales of new single-family homes in 2007 are down 28 percent from 2006 sales, and are down more than 40 percent since 2005. The housing downturn will continue next year, as single family home sales in 2008 will probably fall to the lowest level since 1995. Building permits, housing starts, and housing completions are also down more than 20 percent from 2006 levels (U.S. Department of Commerce, 2007). Figure 15 shows the recent downward trends in both housing starts and building permits (U.S. Bureau of Census 2007). In addition, the U.S. has a historically high inventory of homes for sale, currently representing nearly 10 months of demand.

The collapse of the sub-prime mortgage market and rising home foreclosures are likely to exacerbate and extend the downward trends in the domestic housing market and therefore the demand for timber. By one estimate, more than 2 million borrowers have lost or will lose their home to foreclosure as a result of the subprime mortgage implosion (Schloemer et al. 2006). The slowdown in the U.S. housing and real estate market is showing no signs of letting up. Reflecting this bearish outlook, the National Association of Home Builders index of home builder’s confidence is currently at its lowest level since 1991.

**FIGURE 15.**

**Historic Trends in U.S. Housing Starts and Building Permits**

Figure 15 shows the recent and dramatic downturn in the U.S. housing market.



Source: U.S. Bureau of Census, 2007. Note: Data for 2007 is based on seasonally adjusted data from July 2007.

As a result of the drop in the housing market, lumber prices are also falling. Figure 16 shows the historic trends in the framing lumber composite price.<sup>19</sup> The recent drop in lumber prices and demand last year resulted in a drop in lumber production from sawmills. Sawmills in the coastal areas of Washington and Oregon cut production 6 percent in 2006, with an additional decline of 6 percent forecast for 2007 (Western Wood Products Association 2007).

The weak housing markets in the United States and the continued oversupply of lumber is currently forcing mills in the PNW and Canada to curtail production and in some cases shut down. With prices down, housing down, and more efficient mills in the PNW cutting production, an increase in demand for Alaskan lumber in the near future seems unlikely.

### Forest Service Policy on Shipping Unprocessed Sawlogs to Washington State

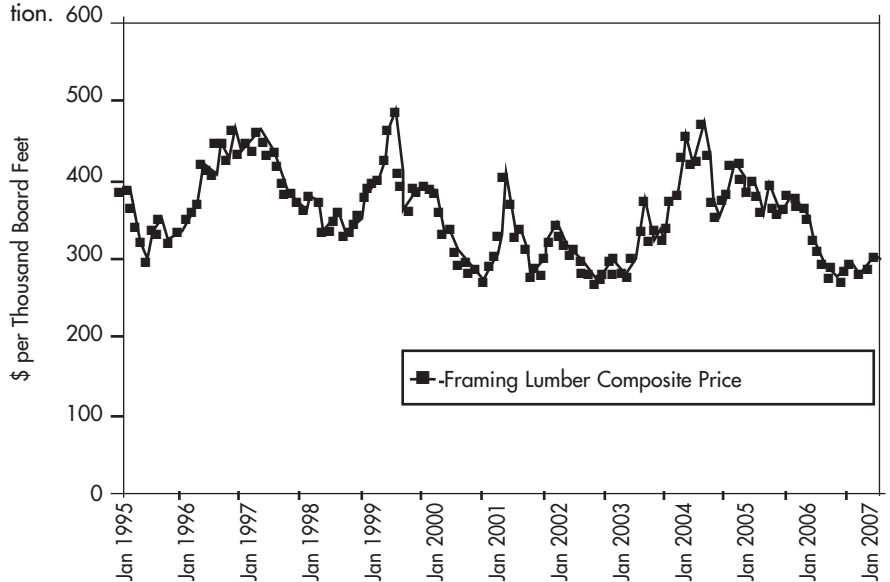
In March 2007, the Regional Forester for Alaska approved a new Forest Service policy allowing shipments of unprocessed sawlogs from the Tongass to states in the lower 48. The policy allows interstate shipment of Sitka spruce and western hemlock sawlogs smaller than 15 inches, as well as grade 3 or grade 4 logs of any diameter (Bschor 2007). The “export” market targeted by this new Forest Service policy is essentially the out-of-state (export) log market for sawmills in Washington’s Puget Sound area (Housley et al. 2007).

Housley et al. (2007) prepared an analysis of several log export scenarios, including the one selected by the Forest Service. It is important to note that Housley et al. (2007) did not analyze whether there is demand for whole logs

FIGURE 16.

### Historic Trends in the U.S. Framing Lumber Composite Price

Figure 16 shows the recent drop in lumber prices as well as a slightly downward trend in prices since 1995. Prices are nominal and have not been adjusted for inflation.



Source: *Random Lengths*, 2007.

from the Tongass in the lower 48 states: it was more an analysis of the potential impact on Tongass stumpage prices from allowing whole log shipments, assuming a demand does in fact exist.

In order to gain some insight on the potential demand for unprocessed Tongass sawlogs we briefly examine: 1) the size of the log export market in the Puget Sound area; 2) the other regions competing in that market; and 3) the competitiveness of Southeast Alaska in Washington’s log export market.

In general, we doubt whether Alaska can be competitive in Washington’s log import market against low cost suppliers in British Columbia as well as other regional competitors. Further, we are concerned that taxpayers will still subsidize the Tongass timber program even with the log shipment policy, and those subsidies could increase if the

<sup>19</sup> The framing lumber composite price is designed as a broad measure of price movement in the lumber market. The composite price is a weighted average of 15 key framing lumber prices (Random Lengths, 2007).

current decline in the domestic lumber market continues.

**Offering a Supply of Logs Does not Create a Demand for Those Logs**

The eventual demand for unprocessed Tongass sawlogs will be based on the willingness of sawmills in Washington to pay the full cost of shipping the logs from Alaska to the Puget Sound. Future timber sales on the Tongass may be uneconomic simply because sawmills in Washington are not willing to pay the cost to ship the logs to market. The willingness to pay the cost to transport sawlogs from Alaska is influenced by the comparative cost from other log suppliers. The logs (and lumber) shipped from Southeast Alaska must be competitive with other regions that supply logs to sawmills on the west side of Washington in order to gain market share.

Sawmills on the west side of Washington state (a proxy for the sawmills in Puget Sound area) currently purchase about 152 million board feet, or about 8 percent of their annual sawlog volume from out-of-state sources (Eastin et al. 2007). Washington’s export log market is dominated by British Columbia – which accounts for 85% of the west side of Washington’s out-of-state log supply. Oregon accounts for nearly all of the remaining 15 percent of that market (Eastin et al. 2007).<sup>20</sup> The Forest Service has provided no data or evidence to suggest that log shipments from the Tongass will be a lower cost supply than logs shipped to Washington from BC and

Oregon. Without supporting data or analysis, it is very difficult to see how Tongass logs can gain market share, especially when competing against British Columbia and Oregon, which are both more competitive and closer to Puget Sound than Alaska.<sup>21</sup>

As it has done in the past, we fear the Forest Service will be offering more timber for sale than industry is willing to buy, costing taxpayers millions in additional subsidies. Just because the Forest Service plans to offer unprocessed Tongass sawlogs for interstate shipment, does not mean that sawmills in Washington are willing to pay for those logs. Businesses fail all the time, not for a lack of supply, but because consumers were not willing to pay the cost of the product.

**Taxpayer Subsidies Still Required, Even if Unprocessed Logs are Shipped to the Lower 48 States**

Another issue worth examining is whether the Forest Service’s new log shipment policy will eliminate the use of taxpayer subsidies to support the Tongass timber program. Housley et al. (2007), in their analysis of the agency’s preferred export scenario, estimated negative stumpage values for the North zone and for the Yakutat zone<sup>22</sup> on the Tongass, with only the South zone having slightly positive stumpage values. When the results are broken down by species, hemlock is appraised with a negative stumpage value in all zones. Negative stumpage values for hemlock indicate that taxpayers will continue to have to subsidize the Tongass timber program even

<sup>20</sup> As a point of comparison, harvest on the Tongass has been around 50 million board feet in recent years. So a potential market for shipping whole logs to Washington may exist. A more relevant issue is whether unprocessed sawlogs from the Tongass can compete in the log supply market against low cost regional competitors. We have seen no evidence that Alaska can compete in these markets, especially without subsidies.

<sup>21</sup> Distance to mills is a key factor in determining a viable log supply. In Washington, 57% of the sawlogs are harvested less than 50 miles from sawmills. In recognition of high transportation costs, sawlogs more than 200 miles away from Washington’s sawmills represent just 1.5% of the market (Eastin et al. 2007).

<sup>22</sup> The North, Yakutat and South zones refer to planning areas on the Tongass.



PHOTO COURTESY JOHN SCHOEN

when interstate shipments of unprocessed log are allowed. The subsidies for taxpayers could be quite large given the large volume of hemlock available for export.

It appears that at best the new policy will result in hemlock stumpage values that are less negative than before. The

Housley et al (2007) analysis shows no future scenario where hemlock stumpage values are positive – strongly suggesting that the Tongass timber program will continue to cost taxpayers money. The losses to taxpayers are likely to increase given the current downward trends in the domestic housing and lumber markets.

Only one third of the Tongass National Forest supports productive forests, and only four percent is considered valuable for timber purposes. Much of the Tongass is actually rock and ice in the form of mountains and glaciers.

## Recommendations and Conclusions

Based on our review of the assumptions and methodology used in the Brackley et al. (2006) model, we do not believe that the model is an accurate predictor of the total demand for Tongass timber. We further contend that the Forest Service should eliminate from consideration in future planning for the Tongass any scenarios based on hypothetical demand from proposed mills that have not been financed or built. Numerous sources, including history, suggest these mills will not be built, and therefore they should not be included in demand projections. No demand exists until the mills are built and they are willing to pay the full price for logs from the Tongass. The Forest Service also needs to expand the range of scenarios modeled to include scenarios that project decreasing timber demand. The current range of scenarios is insufficient, as all four scenarios assume demand will increase, despite substantial evidence to the contrary.

In short, the Brackley et al.'s (2006) timber demand projections do not represent the best available science and, therefore, should not be used to determine the suitable timber base or the amount of timber to offer for sale. The Forest Service is required to use the best available science. NEPA's requirement to take a "hard look" at environmental and economic consequences must be based on "accurate scientific information" of "high quality."<sup>23</sup>

The Data Quality Act and the agencies' interpreting guidance expand on this obligation, requiring that

influential information or decision-making input be based on "best available science and supporting studies conducted in accordance with sound and objective scientific practices."<sup>24</sup> Under the Data Quality Act, federal agencies are required to use information that is of high quality and that is objective, useful, and verifiable by others.<sup>25</sup> The agency must also use "sound statistical and research" methods.

Because of the important and irreversible on-the-ground decisions that will be made based on the Forest Service's interpretation of timber demand projections, it is essential that those projections be grounded in realistic trends and based on the best available science. As it now stands, the Forest Service has not developed or employed the best available science, and its projections of future Tongass timber demand are grossly exaggerated.

### Accurately Assess Market Demand for Tongass Timber

Given the unreal and faulty assumptions underlying the market demand analysis conducted by Brackley et al. (2006), we believe that the only possible remedy is to commission a new study. Such a study should have the following characteristics:

➤ **Model grounded in economic reality**

A timber market demand analysis should take into account recent and likely continuing trends in the structure and performance of the global and regional forest products industry. The analysis should be based on a forthright assessment of the competitive advantages and

<sup>23</sup> 40 C.F.R. § 1500.1(b).

<sup>24</sup> Treasury and General Government Appropriations Act for Fiscal Year 2001, Pub.L.No. 106-554, § 515. See also, Office of Management and Budget "Information Quality Guidelines," available at [http://www.whitehouse.gov/omb/inforeg/iqg\\_oct2002.pdf](http://www.whitehouse.gov/omb/inforeg/iqg_oct2002.pdf) and individual "Agency Information Quality Guidelines," available at [http://www.whitehouse.gov/omb/inforeg/agency\\_info\\_quality\\_links.html](http://www.whitehouse.gov/omb/inforeg/agency_info_quality_links.html).

<sup>25</sup> Ibid.

disadvantages of the Southeast Alaska forest products industry.

➤ **Domestic demand modeled directly**

Rather than positing a fixed relationship between Pacific Rim exports and exports to the lower 48 states, the new effort should model domestic demand directly. The new model should include relevant parameters reflecting demand in the domestic lumber market, and the competitiveness of Southeast Alaska in that market.

➤ **Decreasing demand scenarios included**

If nothing else is clear about the market for Southeast Alaska's timber, it is that it is declining and has been declining for more than 30 years. Failure to model for the continuation of this long term downward trend is irresponsible. Further, failure to include these decreasing demand scenarios results in an inadequate range of alternatives for use in the forest planning process for the Tongass.

➤ **Demand scenarios based on hypothetical mills eliminated**

Only realistic scenarios based on the current structure of the wood products industry should be modeled and considered for forest planning purposes. As in past Forest Service assessments, hypothetical mills should not be a part of the timber demand analysis.

Econometric models with regional supply and demand functions can be used to predict the economic impacts of changes in timber harvests. Recent application of such a model analyzed the effects of harvest restrictions in the U.S. Pacific Northwest and incorporated the Canadian wood products industry (Wear and Murray, 2004). As noted by one of the reviewers to this report, "My professional opinion is that Tongass

timber harvests are sufficiently important (and controversial) to warrant the use of a similar model to predict timber demand (Kerkvliet 2007).

### **Time for a New Management Paradigm**

Coincident with the decline in Southeast Alaska lumber markets has been the increasing importance of recreation, tourism and amenity seeking migrants to the quality of life economy of Southeast Alaska. In contrast to its comparative disadvantage in timber, rural Southeast Alaska enjoys what regional economists call a "comparative amenity advantage" in attracting and retaining residents and businesses.

Areas with high levels of natural amenities—such as the scenic beauty, abundant fishing and recreation opportunities, and wilderness areas— attract residents, and many of these residents rely on non-traditional sources of income (Beyers and Lindahl 1996, Nelson 1999, McGranahan 1999, Rudzitis 1999, Deller et al. 2001, Shumway and Otterstrom 2001, Lorah and Southwick 2003, Garber-Yonts 2004, Henderson 2004, Henderson and Abraham 2004, Crone 2005). Retirees and others who move to Alaska for quality of life reasons often bring with them accumulated wealth in the form of investment and retirement income.

Robertson (2005) found that in Southeast Alaska, non-labor income increased four-fold between 1969 and 1996. In the subsequent decade non-labor income continues to be very important, currently accounting for about 31 percent of total personal income. However, as noted by Robertson (2005), the role of non-labor income in stimulating economic growth has been largely overlooked.

Income from fishing, recreation and tourism as well as the professional and service sector are also increasing in importance. Over the past quarter-

century, the U.S. economy as a whole has seen a shift from extractive and primary manufacturing industries to service-oriented businesses, a trend that is also apparent in Alaska. Robertson (2005) concluded that resource extractive industries were no longer a major source of income growth in rural Southeast Alaska. Rather, income growth is occurring in diverse sectors, including health services, construction, local government and retail. Job growth in these sectors can be directly or indirectly tied to the natural amenities provided by the Tongass National Forest.

Given the increasing importance of fishing, recreation and the services and professional sector in Southeast Alaska, it is time for management of the Tongass to reflect these trends. The Forest Service has long struggled to establish and force feed a timber industry to support local economic development and jobs. Millions in taxpayer subsidies have been spent to support fewer and fewer jobs in the timber industry. As one reviewer noted, “Timber jobs have become an increasingly expensive federal subsidy, remain a minor economic component locally, and are declining as more timber is being exported to support jobs in the PNW.” (Mehrken 2007).

The decline in agency budgets, the growing federal deficit, and the declining demand for timber, strongly suggests that taxpayers’ money would be better spent supporting non-timber programs.

Rather than focusing on timber, a more important economic role for the Tongass is to provide quality recreation, clean water, healthy wildlife and fish populations, which attract anglers, hunters and tourists, as well as enhancing the quality of life for existing and potential residents.

The challenge for the Forest Service is to work with communities to capture more of the economic benefits from recreation and tourism “in ways that least detract from local quality of life”

(Crone 2005). Planning for amenity development is one way to sustain communities and local quality of life. With these trends in mind, we suggest the following management goals:

- **Focus on habitat restoration.** Priorities should shift federal assistance away from harvesting old growth and toward fish and wildlife habitat improvements.
- **Protect old growth forest reserves for fish and wildlife habitat, and subsistence use of the forest.** Fish and wildlife habitat improvements should move forward on their own merits and should not be just a by-product of the timber program.
- **Invest in and sustain the recreation resource.** Ensure that recreation trails, cabin and wildlife viewing platforms are built and maintained, and that residents and visitors alike are safe, happy and plan a return visit.
- **Broaden the agency’s perspective on the economic benefits flowing from the Tongass National Forest.** Economic benefits should include non-timber benefits in order to support the true economic engines of Southeast Alaska: nature-based recreation and tourism, commercial fishing, and amenity-based development.
- **Establish a timber program that is the right size to meet realistic estimates of actual demand.** Focus in particular on small-scale logging and programs to support value-added wood products manufacturing and regional marketing, with the goal of generating local jobs supplying local wood to meet local needs.

These steps—a forthright and realistic assessment of potential demand for Southeast Alaska forest products, coupled with efforts to establish and promote non-timber amenity-based economic development opportunities—

would be far more productive and beneficial, in our view, than continuing to waste taxpayers' dollars and administrative effort attempting to support an oversized and non-competitive industry to meet illusory demand.

### Consequences of High Levels of Logging

If the Forest Service moves forward and sets a harvest level in order to meet a market demand for Tongass timber that does not exist, the following consequences are likely (Crone 2007):

- The Forest Service will continue to lay out timber sales which will not be sold.
- Timber purchasers will continue to over-harvest the best species and grades of timber, leaving the less valuable timber behind and decreasing the ecological integrity of the forests.
- Much of this timber will continue to be exported as round logs and generate few if any jobs for local wood processors.
- The suitable timber land base will be increased by relaxing environmental protections and reducing old growth reserves.
- Highly valued intact watersheds (from a local, national and global perspective) will be degraded in the name of generating a small amount of local economic activity.
- This local economic activity will continue to be highly subsidized by American taxpayers.
- The Forest Service will continue to propose roads into areas to access timber that if built, render the Forest Service unlikely to recover the cost of this road building.



PHOTO COURTESY SCOTT HED

Five species of salmon spawn in the rivers and streams of the Tongass National Forest.

In light of Dr. Crone's expert review, and the consequences listed above, we believe that if the Forest Service chooses a high level of logging based on flawed demand projections, the communities of Southeast Alaska will continue to believe their economic fortunes are tied to an industry which has serious competitive disadvantages, is in serious decline, and has little hope of recovery to the extent assumed by the Forest Service's flawed analysis.

Communities in Southeast Alaska should be forewarned of these economic realities, so that they can make informed and rational decisions about where their true future economic opportunities lay with respect to management of the Tongass National Forest. It is our hope that this analysis has demonstrated that for this to happen, communities in Southeast Alaska must continue to look beyond the timber industry.

## Appendix A. Economic Profile for Southeast Alaska

APPENDIX A, TABLE A

### Changes in Employment and Income, 1979 and 2005

All values in millions of 2005 dollars, unless noted	1979	% of TPI 1979	2005	% of TPI 2005	Change 1979-2005	% Change 1979-2005
<b>Total Personal Income and Population:</b>						
Total Personal Income (TPI)	2,028	100%	2,587	100%	559	27.6%
Population (persons)	53,243		71,043		17,800	33.4%
Per Capital Personal Income (\$s)	38,080		36,411		-1,669	-4.4%
<b>Derivation of Personal Income:<sup>1</sup></b>						
Earnings by Place of Work <sup>2</sup>	1,876	92.5%	2,021	78.1%	144	7.7%
- Pers. Contributions For Social Insur. <sup>3</sup>	155	7.7%	189	7.3%	34	21.7%
+/- Adjustment for Residence <sup>4</sup>	-22	1.1%	-39	1.5%	-16	n/a
= Net Earnings by Place of Residence <sup>5</sup>	1,699	83.8%	1,793	69.3%	94	5.6%
+ Dividends, Interest and Rent <sup>6</sup>	205	10.1%	419	16.2%	214	104.4%
+ Transfer Payments <sup>7</sup>	124	6.1%	375	14.5%	251	202.6%
= Total Personal Income (TPI)	2,028	100%	2,587	100%	559	27.6%
<b>Components of Earnings (Labor Income<sup>2</sup></b>						
Other Labor Income <sup>8</sup>	1,364	67.3%	1,372	53.0%	8	0.6%
Proprietor's Income <sup>9</sup>	298	14.7%	398	15.4%	100	33.5%
Farm Proprietors' Income	215	10.6%	251	9.7%	36	17.0%
Farm Proprietors' Income	0	0%	0	0%	0	8.5%
Non-Farm Proprietors' Income	215	10.6%	251	9.7%	36	17.0%
<b>Employment</b>						
	1979	% of Total 1979	2005	% of Total 2005	Change 1979-2005	% Change 1979-2005
<b>Total Employment</b>	<b>32,082</b>	<b>100%</b>	<b>51,118</b>	<b>100%</b>	<b>19,106</b>	<b>59.6%</b>
<b>Employment by Type</b>						
Wage and Salary	27,070	84.4%	38,401	75%	11,331	41.9%
Proprietors	5,012	15.6%	12,787	25%	7,775	155.1%
Farm	12	0%	26	0.1%	14	116.7%
Nonfarm <sup>10</sup>	5,000	15.6%	12,761	24.9%	7,761	155.2%

<sup>1</sup> Total Personal Income differs from Earnings by Place of Work and Earnings by Industry in two respects. First, it includes non-labor income and excludes personal contributions for social insurance. These adjustments make TPI a more complete picture of the money available to the region's residents. Second, it measures the income of the region's residents, rather than the earnings of employees and owners of firms located in the region. That is, it accounts for earnings of commuters to and from other regions.

<sup>2</sup> Earnings by Place of Work consists of wages salaries, other labor income, and personal contributions for social insurance earned or paid at firms located in the area. Components of Earnings is also based on place of work rather than on residence of workers.

<sup>3</sup> Personal Contributions to Social Insurance are payments by workers and those self-employed into Social Security, Medicare, Unemployment insurance, and other programs. This adjustment is made for the purpose of calculating Total Personal Income, but is not made to Components of Earnings or Earnings by Industry.

<sup>4</sup> Adjustment for Residence is the net inflow of earnings of interarea commuters. A negative adjustment means that the earnings of workers commuting into the region are greater than the earnings of residents who commute to jobs outside the region. This adjustment is made for the purpose of calculating Total Personal Income, but is not made to Components of Earnings or Earnings by industry. Because this adjustment may be positive or negative, percentage change over time is difficult to interpret, so we do not calculate it here.

<sup>5</sup> Net Earnings by Place of Residence comprises the labor income of residents in the region.

<sup>6</sup> Dividends, Interest and Rent consists of current earnings from past investments and includes a capital consumption adjustment for rental income of persons.

<sup>7</sup> Transfer Payments are payments to persons for which no current services have been performed. They comprise payments to individuals and to nonprofit institutions by federal, state, and local governments and by businesses.

<sup>8</sup> Other Labor Income consists of the payments by employers to privately administered benefit plans for their employees, employer contributions to government employee retirement plans, fees paid to corporate directors, and miscellaneous fees.

<sup>9</sup> Proprietor's Income is the current product income (including income in kind) of sole proprietorships, partnerships, and tax-exempt cooperatives. It includes inventory valuation and capital consumption adjustments.

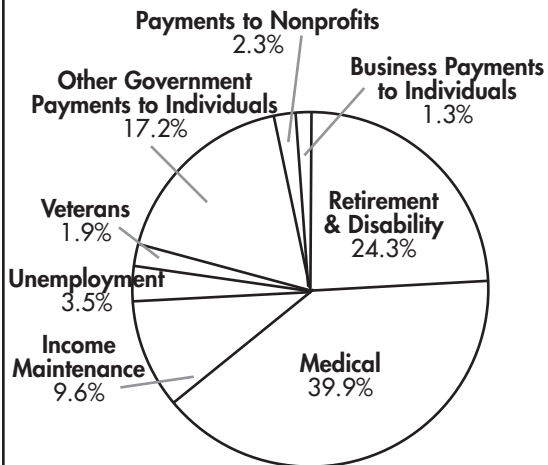
<sup>10</sup> Nonfarm Proprietors does not include limited partners.

Source: Bureau of Economic Analysis (2007). Regional Economic Information System (REIS) CD-ROM. Washington, DC: US Department of Commerce.

**Summary of Trends**

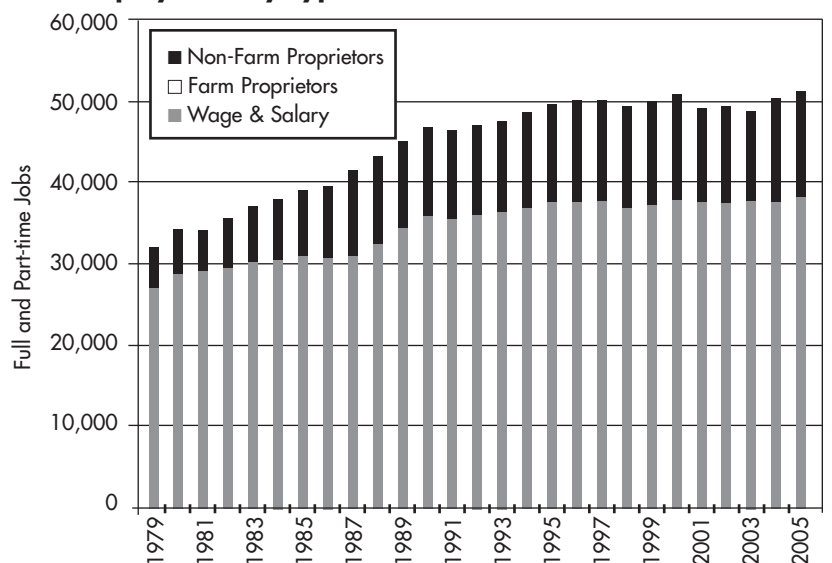
- Southeast Alaska’s population has grown by a third since 1979. During the same period, the population of Alaska as a whole grew by 64.4%.
- Real Personal Income grew more slowly than population in Southeast Alaska (up 27.6% since 1979), with a reduction in per-capita personal income being the partial result. For all Alaskans, on average, real income growth kept pace with population growth over the same period, leaving income per person unchanged.
- In Southeast Alaska, income growth has come primarily from non-labor income, including Dividends, Interest and Rent, and Transfer Payments. The latter comprise retirement- and health-related payments, such as Social Security and Medicare, and indicate an ageing population. Transfer payments also include the Permanent Fund Dividend, which in 2005 accounted for as much as 17.2 percent of all transfer payments. Along with growth in transfer payments, growth in investment income indicates a gradual decrease in the relative importance of employment – one’s job – to overall income.
- Labor income (wages and salaries) is the largest source of income, but it is not the fastest growing. Of the 5.6 percent growth in labor income since 1979 (see “Net earnings by place of residence”), most has come in the form of “other labor income,” which includes employee benefits, such as health insurance and retirement funds.
- Another source of labor income growth has come from the earnings of self-employed persons (non-farm proprietors in the table above). This growth may indicate a growing entrepreneurial sector that could be attracted to Southeast Alaska for its scenic, recreational and other quality-of-life amenities. The rate of growth in proprietor’s employment and income is, however, much slower than in Alaska as a whole, so one should use caution in speculating whether Southeast Alaska has competitive advantages relative to other parts of the state for such amenity-driven development.

**APPENDIX A, FIGURE A**  
**Transfer Payments, Southeast Alaska 2005**



Source: Bureau of Economic Analysis. 2007. Regional Economic Information System (REIS). <http://www.bea.gov/regional/reis>.

**APPENDIX A, FIGURE B**  
**Employment by Type, Southeast Alaska, 1979-2005**



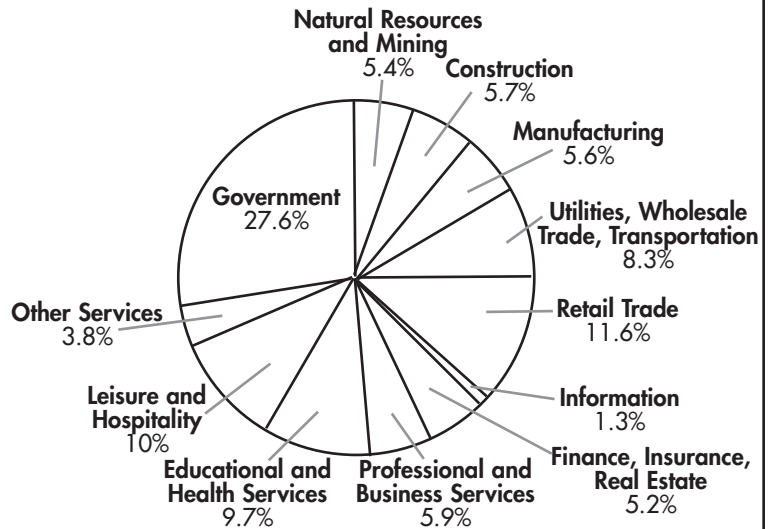
Source: Bureau of Economic Analysis. 2007 Regional Economic Information System (REIS). <http://www.bea.gov/regional/reis>.

- Growth in proprietor's employment (i.e. self-employment), is the fastest growing type of employment. The number of sole proprietors grew by 155 percent, adding more than 7,700 jobs from 1979 to 2005, while the number of wage and salary jobs grew by just 42 percent during the same period. In part due to structural changes throughout the economy and within particularly industries, but also in part due to greater mobility and opportunity to exercise personal choice in one's working arrangements, more and more people are working for themselves, rather than for someone else. Like retirees, the self-employed often can locate where they choose, and they often choose to locate in areas with high amenities.

Aside regarding amenities: According to Dr. Richard Florida of Carnegie-Mellon University, "high amenity" has come to mean on-demand access to diverse, high-quality, nature-based recreational opportunities. Many of these are the sort found especially, if not exclusively, on protected public wildlands. With the day of the weeks-long vacation largely just a memory, the ability to get out quickly for short experiences in wilderness has become increasingly important to individuals deciding where to live and work.

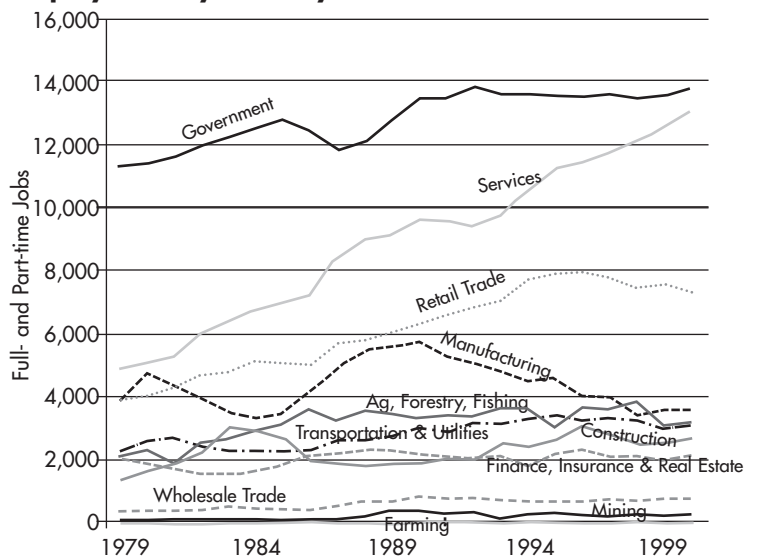
- Another way to look at employment and income is by industry. The biggest employers in Southeast Alaska include Government (27.6%), Retail Trade (11.6%), Leisure and Hospitality Services (10.0%), and Educational and Health Services (9.7%). Many service sector jobs, like the industries that supply them, are "footloose," meaning they can locate where they choose, rather than where there is a source of raw materials and/or purchasers. Software development, web design, architecture, even some medical specialties can be located far from clients and, therefore, can be located close to amenities, including protected wildlands
- Despite a downturn in manufacturing employment that began in 1990, most industries in Southeast have either held their own or, like services and retail trade have added more jobs.
- Services and Retail trade contain many of the industries most closely associated with recreation and tourism spending, including lodging, recreation services and restaurants. In 2005, such industries accounted for approximately 8% of labor income earned in Southeast Alaska.

**APPENDIX A, FIGURE C**  
**Employment by Industry Group, Southeast Alaska, 2005**



Source: Bureau of Economic Analysis. 2007. Regional Economic Information System (REIS). <http://www.bea.gov/regional/reis>.

**APPENDIX A, FIGURE D**  
**Employment by Industry, Southeast Alaska, 1979-2000**



Source: Bureau of Economic Analysis. 2007. Regional Economic Information System (REIS). <http://www.bea.gov/regional/reis>.

## Appendix B. Reconciliation of Reviewer Comments

- Title:** Déjà vu on the Tongass: How Overestimating Timber Demand Prevents Responsible Stewardship.
- Authors:** Morton, Pete; Phillips, Spencer; Gore, Anne.
- Reviewer:** **Joe Mehrkens.** Former USDA Forest Service Regional Economist, Alaska office, current Principal at Environmental Economics, Auke Bay, Alaska.
- Comment 1.** Page 1, 2nd paragraph, last sentence. It is not planners and economists that have an incentive to inflate demand and prices. It is the agency seeking to minimize losses to the timber base in order to promote their primary program and inhibit the chances of further land withdrawals.
- Response 1:** Rewrote text to place more emphasis on the timber base as recommended.
- Comment 2:** Page 1, 3rd Paragraph, last sentence. Regional competition is well defined later in the text, but not here. Recommend it be deleted and state "...increasing global competition from more efficient mills outside Alaska."
- Response 2:** Rewrote text to reflect a focus on global competition.
- Comment 3.** Page 3, 3rd Paragraph. This is just a technical note. Some utility logs have been sawed into high grade timber. By definition utility logs are any grade logs with a high amount of defect, rot, breakage, etc. Nearly all the utility grade logs were used to make pulp, but the occasional Sitka Spruce tree – that was usually down and largely rotten – still contained saw timber. The reason I know this is from the 2400-17 timber appraisal data which shows the timber sawn by species and grade.
- Response 3:** Comment noted and relevant text about utility logs deleted as recommended.
- Comment 4.** Page 4, 4th Paragraph, last sentence. The term operability may not be clear to many readers, suggest, "...attributed to more difficult terrain, longer timber hauls and log size."
- Response 4:** Rewrote text to better define the term "operability."
- Comment 5.** Page 5, 5th Paragraph, last sentence. It is even more unlikely that major capital investment will be made to expand the timber industry. Suggest, "It is even more unlikely that capital investments will be made to expand the southeast Alaska timber industry."
- Response 5:** Rewrote text to reflect unlikely capital investment in the timber industry.

**Comment 6.** Page 6, Mehrkens cite. The source should be: Mehrkens, J.R. 2006, Timber Sale and Subsidy Analysis for the Southeast Alaska Conservation Council, Environmental Economics – Alaska, PO Box 210016, Auke Bay, AK 99821-0016.

**Response 6:** Citation corrected as recommended.

**Comment 7.** Page 12, Willingness to pay. An analysis of stumpage prices has many potential pitfalls. This is especially true for time periods inclusive of the long-term contracts.

Stumpage prices have been greatly reduced due to provisions for emergency rate re-determinations in the long-term contracts and federal buybacks (usually a choice to walk from the timber sale or receive a stumpage reduction). Another point I would stress that even the price for old-growth Sitka Spruce and Yellow Cedar – our cash money trees in the past that subsidized the pulp operations and everything else – have also tanked.

**Response 7:** Comment noted and text changed as recommended reflecting the emergency rate redeterminations and the low prices for Sitka Spruce and Yellow Cedar.

**Comment 8.** Page 13, Timber Demand Model is Obsolete, first sentence after the listed assumptions. Strengthen your conclusion. Suggest, "...Not one of these assumptions is valid or accurately reflect current markets."

**Response 8:** Rewrote text as recommended.

**Comment 9.** Page 15, under figure 9, last sentence. Suggest, "...Figure 9 shows a precipitous decline in demand since the early 1990s and is in contrast to the dramatic rising demand projected by the Forest Service. These projections are highly improbable given no accompanying plans or feasibility studies. To the contrary, past trends are most likely to continue."

**Response 9:** Comment noted and text changed as recommended.

**Comment 10.** Page 16, 3rd Paragraph. Suggest adding a sentence to the end. In contrast to good science, the Forest Service demand projection is simple assumption with no supporting evidence.

**Response 10:** Rewrote text to reflect the lack of supporting evidence.

**Comment 11.** Page 23, 2nd paragraph, stumpage prices. Suggest adding, "...Historical stumpage prices do not support a rising trend for the future. In fact just the opposite is true. When stumpage rises above normally very low historic rates, it is followed by rate re-determinations, federal bailouts or timber sale cancellations by mutual agreement. All three factors have held stumpage rates to minimal levels."

**Response 11:** Rewrote text as recommended and a footnote on rate re-determinations.

**Comment 12.** Page 24, last paragraph, last sentence. Coastal BC is in the same bad situation as SE AK. Suggest "...southeast Alaska and coastal British Columbia wood products industries have...."

**Response 12:** Comment noted and text changed as recommended to include Coastal BC.

**Comment 13.** Page 30, the positive recommendations. Recommend that a preceding paragraph be included about why the Forest Service has struggled so long and hard to establish and force feed a timber industry – to support local economic development and jobs. Then launch into the relative jobs levels between timber, mining, recreation/tourism, commercial fisheries, etc. Conclusion: Timber jobs are an expensive federal subsidy, a minor economic component locally and are declining as more timber is being exported to support jobs in the PNW.

I am very skeptical about a new timber industry founded on second-growth. The time for broad forest values has come. People want access to and live near wild clean places.

**Response 13:** Rewrote text changed as recommended. We have added text on local economic development and an Appendix with recent trends in the regional economy. We rewrote text to recommend proper stewardship on the many broad forest values that flow from the Tongass National Forest.

**Reviewer:** **Dr. Steve Colt.** Associate Professor of Economics, Interim Director, Institute of Social and Economic Research, University of Alaska Anchorage, Anchorage, Alaska.

*Full disclosure: TWS has contributed funding in support of research directed by me pertaining to nature-based tourism in Southeast Alaska. TWS did not exercise any control over the methods, scope, or dissemination of this research.*

**General**

**comment 1.** The analysis appears technically sound. The authors cite ample evidence to support their criticisms of existing timber demand projections. It is important to remember that this paper is not seeking to propose substitute projections; its goal is essentially to criticize and for that purpose the evidence is compelling.

**Response 1:** Comment noted. Reviewer is correct; we offer no substitute projections and make no claims as such.

**General**

**comment 2.** Authors should be sure to note directly in the text whether dollars and changes in dollar amounts are real or nominal. In some cases this distinction could be material, e.g. increases in stumpage values discussed on p. 23. The graph for that page does state that the units are 1982 dollars, but it would be better to also reinforce this in the text. A global statement at the start of the paper that "all dollars are adjusted for inflation to 19xx purchasing power" might be helpful, if that is in fact the case.

**Response 2:** Comment noted and text changed as recommended indicating nominal or real dollars where appropriate.

**General**

**comment 3.** The section “Conclusions, Consequences and Suggested Remedies” from pp 27 to the end contains recommendations rather than analysis. Hence, I have no professional opinion about this section.

**Response 3:** Comment noted

**Specific**

**Comment 1.** I am confused about the “three major flaws” in the Brackley model. (See e.g. p. 25, “The third major flaw...”) Do the three flaws correspond to the “three implicit assumptions” mentioned at the start of this section (labeled: The Timber Demand Model is Obsolete) on page 13? It would help to have the three flaws listed together and previewed before going into detail about each.

**Specific**

**Response 1:** Comment noted and text changed as recommended to better explain the two levels of flawed assumptions discussed in the report. First we examine the implicit assumptions of the model that are no longer valid, and second we examine the explicit assumptions included in the Brackley et al. (2006) report.

**Specific**

**Comment 2.** Some care should be taken in quoting Brooks and Haynes from 1997 about ethanol since we are now 10 years beyond that time. The demand for ethanol and/or chips could be quite different now. I suggest placing this reference to B&H in a more historical context to avoid the impression that the B&H analysis applies today.

**Specific**

**Response 2:** Comment noted and text changed as recommended.

**Specific**

**Comment 3.** The reason that no one has built new pulp mills seems to be overall lack of economic viability rather than “investment risk.” Lack of viability is more or less a “low or negative mean return on investment” idea. Investment risk is more or less a “high variance of return on investment” idea. The distinction is important because there might be some economic justification for using policy or subsidies to ameliorate the risk of a high-risk/high return project. There is far less justification for using public policy or public money to promote a low-return project, regardless of the risk.

**Specific**

**Response 3:** Rewrote text as recommended to reflect a correct reference to low return investments, rather than high risk investments.

**Reviewer:** **Dr. Joe Kerkvliet.** Resource Economist, The Wilderness Society, Bozeman, Montana.

**General**

**Comments:** The report by Morton, et al. (2007) criticizes the analysis of Brackley, et al. (2006) for failing to provide an adequate empirical analysis of the market for the products of timber harvests from the Tongass National Forest. In my view, Morton et al. make 5 major arguments most closely related to the predicted market of Tongass harvests:

1. The timber industry in the Tongass National Forest area is a weak competitor with high production and transportation costs. This is exacerbated by the fact that Tongass' timber harvests are increasingly of species (especially hemlock) and grades which can only be used to produce wood products with inferior quality, low price, and limited demand;
2. The major market for Tongass' harvests is the U.S. domestic market where Alaska producers, because of their high production costs and low quality product, are marginal suppliers, at best;
3. Although the Asian market (especially Japan), formerly provided a strong outlet for Tongass harvests, its role has been declining in recent years and this decline is likely to continue for any reasonable planning horizon;
4. Because of (3) and (4), Brackley et al.'s methodology of predicting the demand for Tongass' harvest using the assumption that "the volume of sawn wood imports to the defined Pacific Rim market will increase over the next 20 years to a level equal to Japan's imports in 1997 (Brackley et al., page 24)" is "obsolete and biased and, therefore, inappropriate for projecting demand for timber on the Tongass (Morton et al., page 2)";
5. The investments required to utilize Tongass harvests, projected by Brackley et al. are unlikely to materialize.

Overall, I find the arguments made by Morton et al. reasonable and persuasive. Morton et al. provide substantial evidence in support of the five arguments listed above. The evidence provided by Morton et al. is in sharp contrast to the nearly complete lack of evidence provided by Brackley et al. in support of the assumptions underlying their projections.

Specifically, Brackley et al. assume Tongass timber harvests will support exports to the Pacific Rim at the level of Japanese exports in 1997. This assumption is used in spite of Brackley et al.'s recognition that "...it appears that the traditional link between Alaska and Japan have become greatly diminished (Brackley et al., page 19). Apparently, Brackley et al. assume that the "slack" created by changes in market structure, building codes, and consumer demand for wood products (see Morton et al., page 12), will be compensated by activity in other Asian

nations, especially China. However, in saying that “there will likely be a high and almost unprecedented demand for forest products in the Pacific Rim (Brackley et al., page 21), Brackley et al. ignore the possibility that this demand is likely to be met by producers in other nations, including Russia and New Zealand (see Crone, pages 54-55).

More generally, I agree with Morton et al. that the modeling used by Brackley et al. to support demand projections is less than adequate. This criticism is especially cogent in light of tools available to model market interactions in the wood products industry. These tools, which are certainly available to U.S. Forest Service researchers, include econometric models with regional supply and demand functions which can be used to predict the economic impacts of changes in timber harvests (see, for example, Adams, D.M., Haynes, R.W. 1980. “The 1980 Softwood Timber Assessment Market Model: Structure, Projections, and Policy Simulations. Forest Science Monograph). A recent application of such a model analyzed the effects of harvest restrictions in the U.S. Pacific Northwest and incorporated the Canadian wood products industry (see Wear, D.C. and Murray, B.C. 2004. Federal Timber Restrictions, Interregional Spillovers, and the Impact on U.S. Softwood Markets. Journal of Environmental Economics and Management. 47: 307-330). My professional opinion is that Tongass timber harvests are sufficiently important (and controversial) to warrant the use of a similar model to predict timber demand.

On a final note, a potential criticism of Morton et al.’s analysis is that decreasing exports to Japan are caused, not by changes in demand and alternative supply conditions as posited by Morton et al., but by restrictions in Alaska timber supply. This is a reasonable hypothesis and should be acknowledged by Morton et al... However, the evidence summarized in Figure 7 (Morton et al., page 10) of the backlog of timber available for cutting does not support this hypothesis.

**Response:** Comment noted and text changed as recommended.



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**COVER PHOTOS:**

Old growth forest is valuable not only for its timber but also for important economic values it can provide in the form of clean water and healthy fish and wildlife populations, which in turn attract tourists, support fishing and tourism industries, and enhance quality of life factors for local communities.

Photo by Scott Harris.

The cost of shipping and processing wood products from the Tongass has always been a challenge to establishing a viable timber industry in Alaska.

Even unprocessed logs, such as those depicted in this photo, are difficult to find a market for due to high shipping costs.

Photo by Mike Sallee.



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