

Appendix H - The Regional Timber Supply-Demand Situation in California

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Appendix H - The Regional Timber Supply-Demand Situation in California

This appendix was created to address public concern about the broad-level timber supply and demand situation in relation to supplies from individual National Forests. Existing information from recent RPA assessments, University of California research, Forest Service research and the State of California's Forest and Rangeland Resources Assessment Program (now renamed the Strategic Planning Program) was used for this purpose.

Historical Harvests from Public and Private Lands - State-wide

Timber harvest in California has been in a downward trend for over 30 years. In 1955, record timber harvests in the State from all lands totaled 6 billion board feet. In that year, harvest from private lands was 4.9 billion and harvest from National Forests was 1.0 billion. Less than 100 million board feet (MMBF) were harvested from other public lands. Since that time, total harvest in the State has trended downward, with shorter term fluctuations associated with the business cycle.

As shown in Table H-1, harvest levels fluctuate widely from year to year rather than following a smooth pattern. Year to year variations are influenced primarily by changes in housing markets and general business conditions. Only over the long-term do available timber inventory and growth levels limit harvests.

State-wide Demand for Timber Products and the Relationship to Harvest Levels

With a population of over 30 million people and a high level of income per capita, California is one of the largest markets for lumber, wood and paper products in the world.

When discussing the relationship between the demand for timber products (lumber, wood and paper) and the demand for timber harvest (stumpage), it is necessary to translate the demand for timber products into its timber harvest equivalent. Expressed in these terms, the demand for timber has been increasing, at a rate about equal to the population growth rate.

Per capita consumption of lumber has declined while per capita consumption of paper and reconstituted wood products has increased over the past 40 years.

As population in the State grew from 10.6 million in 1950 to over 30 million at present, total demand increased from 4 billion board feet annually in 1950 to about 12 billion board feet annually.

While the demand for timber has been increasing, timber harvests in the State have been decreasing. The difference between the growing demand and the declining supply has been made up by increased imports to the State - primarily from Oregon, Washington and Canada. The State has changed from a net exporter to a net importer of timber products over the last 3 decades.

California now relies on imports from other States and countries for more than 75% of its overall timber product needs. Although California receives only a small proportion of its imports from Canada, Canadian shipments to the U.S. have a significant effect on the State's ability to import timber products from the Pacific Northwest. In contrast to California's reliance on imports, the bulk of the timber products produced in both Washington and Oregon are exported to other States and countries.

Increases in Canadian shipments to the eastern half of the U.S. have displaced timber products from the Pacific Northwest. The result has been an increase in the availability of timber products from the Pacific Northwest for California markets. Increased production in the South has also been displacing the Pacific Northwest in eastern markets, which has also increased the availability of products from the Northwest in California markets.

Broad-Level Socio-economic Effects

About 95% of California's population lives in urban areas. As consumers, the primary effect of changes in harvest levels in the State on them is a change in prices paid for timber products. A reduction in timber harvests in the State reduces competition among suppliers, raises market prices and leads to increased use of imported products.

Econometric analysis done by the Pacific Northwest Forest and Range Experiment Station in 1990 indicates that a 1 billion board foot change in harvest level would change lumber prices by about 4%. This translates into a \$250 change in the price of the typical new house at current conversion efficiencies. For the U.S.

**Table H-1. California Timber Harvests by Ownership, 1952-93 Billion BF
(by calendar year)**

Year	Private	Other Public	National Forest	Total
1952	4.40	.05	0.61	5.06
1953	5.32	.04	0.63	5.99
1954	4.79	.05	0.76	5.60
1955	4.93	.06	1.03	6.02
1956	4.69	.08	1.09	5.86
1957	4.36	.07	0.92	5.35
1958	4.47	.09	1.11	5.67
1959	4.29	.12	1.48	5.89
1960	3.70	.11	1.33	5.14
1961	3.85	.11	1.38	5.34
1962	4.05	.11	1.38	5.54
1963	3.69	.11	1.66	5.46
1964	3.50	.11	1.86	5.47
1965	3.21	.14	1.92	5.27
1966	2.97	.11	1.93	5.01
1967	3.06	.11	1.89	5.06
1968	2.82	.16	2.36	5.34
1969	2.88	.12	2.00	5.00
1970	2.62	.10	1.84	4.57
1971	2.59	.13	2.06	4.78
1972	2.66	.12	2.22	5.00
1973	2.81	.10	2.01	4.92
1974	2.86	.11	1.73	4.70
1975	2.71	.10	1.52	4.33
1976	2.76	.08	1.89	4.73
1977	2.96	.09	1.74	4.79
1978	2.78	.08	1.80	4.66
1979	2.26	.09	1.73	4.08
1980	1.86	.07	1.51	3.44
1981	1.72	.04	1.09	2.86
1982	1.50	.06	0.94	2.50
1983	1.89	.08	1.68	3.65
1984	2.09	.03	1.56	3.68
1985	2.17	.06	1.82	4.05
1986	2.31	.09	1.96	4.36
1987	2.58	.10	1.97	4.65
1988	2.60	.06	2.18	4.84
1989	2.64	.06	2.02	4.72
1990	2.67	.05	1.53	4.25
1991	2.07	.06	1.34	3.47
1992	2.12	.06	1.03	3.21
1993	2.26	.05	0.58	2.89

Sources:

California Department of Forestry and Fire Protection
California State Board of Equalization
Bureau of Indian Affairs, USDI

Bureau of Land Management, USDI
Forest Service, USDA

economy as a whole, this would amount to a cost to home buyers of about \$400 million annually.

The high level of competition in the market for timber products means that individual National Forests or individual private timber owners can not significantly affect consumer prices. However, National Forests or private timber owners in aggregate can significantly affect consumer prices. For example, the price relationship described above means that changes in overall National Forest timber supplies since 1990 have resulted in timber product price increases of more than 25%.

Another effect on the urban population is through "indirect and induced" employment. While the employment effect of changes in harvest levels is felt most strongly in the communities where the logging and sawmilling takes place, some broader level employment effects also occur. This is because most firms that manufacture and supply goods and services to logging and sawmill companies are typically located in the major urban centers rather than in the rural areas where the logging and milling takes place.

Logging and milling by itself typically requires 3-6 person years of employment per MMBF processed. Newer, more specialized and automated mills using readily accessible timber are at the bottom of this range, while more labor intensive operations are at the top of this range. This direct employment generates indirect employment in firms that supply goods and services to logging and milling firms and induced employment in firms and governments providing goods and services to those employed directly and indirectly.

In undeveloped rural areas there is little if any indirect and induced effect because suppliers are located outside of the area and logging and sawmilling employees

must "drive into the city" to make major purchases. In addition, on most National Forests a portion of the logs harvested are trucked well outside of the primary zone of influence for manufacturing into lumber products.

As a result, total State-wide employment effects of changes in harvest levels are larger than employment effects occurring in the primary zones of influence for individual National Forests. Employment effects on a State-wide basis range between 10 and 20 person years per MMBF of timber harvested. These employment effect estimates were made with input-output models constructed by the Forest Service and the U.S. Department of Commerce. They reflect present technologies. As the trend toward increased timber utilization efficiency continues, employment generated per unit of timber processed is expected to decline.

The Outlook for Timber Supplies - Private Lands

According to projections completed by the University of California in July 1990, timber supplies from private lands in California can be maintained at over 2.2 billion board feet annually over the 10-15 year life of the Forest Plans. Recent harvest levels and timber growth and inventory levels are shown in Table H-2.

An alternative projection prepared by the California Department of Forestry and Fire Protection in 1988 projected private timber harvests at 1.96 billion board feet annually during the life of the Forest Plans. The primary difference between the 2 projections is the projected response of nonindustrial private owners to higher market demand for their timber. Timber harvests from this ownership are well below the level that can be supported by available timber inventories and growth.

Table H-2. Projected Timber Harvest, Growth and Inventory on Private Land in the Four Major Timber Supply Regions of California

Area	Average Annual Harvest, MMBF 1995-2005	Net Annual Sawtimber Growth, MMBF 1995-2005	Sawtimber Inventory Billion BF 1995-2005
North Coast	1100	1080	39.4
Northern Interior	542	503	18.0
Sacramento	467	413	19.7
San Joaquin	145	148	6.4
All Private Land	2254	2144	83.5
Industrial Private	1760	1169	41.5
Nonindustrial Private	496	974	42.1

Source: Krumland, Bruce and William McKillop, *Prospects for Supply of Private Timber in California*, University of California, July 1990.

Both projections indicate reduced timber supplies from industrial timberland ownerships and increased supplies from nonindustrial timberland ownerships during the life of the Forest Plans. The primary reason for this shift is that harvest levels on industrial ownerships have been at a higher rate than can be sustained by available timber inventories and growth.

By contrast, nonindustrial ownership harvests have been well below the level that can be sustained by the timber inventory and growth on these ownerships. Both projections consider the fact that many of the smaller nonindustrial owners do not consider timber harvesting, and the income derived from it, to be a management objective. Neither of the 2 projections account for harvest restrictions that may be imposed on private harvests as a result of the listing of the northern spotted owl as threatened or changing State regulatory policies.

Large reductions in harvesting as a result of increased regulation of private timberlands are possible, but reliable projections are not currently available.

Outlook for Timber Supplies - Imports

As discussed above, the Pacific Northwest is the primary source of imported timber products in California. Through displacement effects in National markets, Canada and the South also play a major role in determining the supply of timber products from the Northwest that is available to California markets.

According to studies conducted by Forest Service research units, timber supplies from all regions of the United States - except the Pacific Coast - are projected to increase during the life of the Forest Plans. The South is by far the largest timber supply region in the United States.

Studies conducted in Canada indicate that available sawtimber supplies are not expected to restrain exports to the U.S. during the life of the Forest Plans. However, tariff and trade policies may affect Canadian exports to the U.S. over this period.

A decline in timber harvests in the Pacific Northwest over the next 10-15 years is expected. This is due to reduced availability of timber inventories on both public and private lands.

Siberia contains the largest undeveloped softwood timber resource in the world. Chile and New Zealand are increasingly active exporters in world markets. Increased supplies of logs and manufactured wood

products from foreign sources appear likely to be imported to California in the future.

The overall outlook is that imports to California from other States and countries will continue to support increased demands by California consumers over the next 10-15 years. However, imports will likely increase at a lower rate than over the last 20 years -- particularly if growth of the State's economy continues at the slower pace of recent years.

The Outlook for Timber Supplies - National Forests

The allowable sale quantities (ASQs) from individual Forest Plans are an indicator of future timber supply levels from National Forests in California. The ASQ places an upper limit on the average annual amount of green sawtimber from suitable timberlands that can be sold from a National Forest in the first 10-year period of the Plan. Nonchargeable timber (dead timber and fuelwood from either suitable or unsuitable timberlands) is in addition to the ASQ. Historically, nonchargeable volume increased the total amount sold by a few percentage points. However, as a result of changes currently being made in Forest Plans, nonchargeable volume is likely to increase in relation to ASQs in the future.

The amount of timber offered for sale in an individual year is determined through the budget process. When the amount of timber sold in an individual year is less than the ASQ, sales in future years may be higher than the allowable sale quantity, since the ASQ is a limit on the average annual amount that can be sold over a 10-year period.

Over the long-term, the volume harvested equals the volume sold. However, over shorter periods the volume harvested can exceed (or fall short of) the volume sold by causing the uncut volume under contract to decline (or increase). In the early 1980s the volume harvested was less than the volume sold, and in the late 1980s and early 1990s volume harvested exceeded the volume sold.

Timber sales projected under the individual National Forest Plans in Region 5 total between 560 and 710 MMBF annually (refer to Table H-3). This projection is based on likely ASQ and nonchargeable volumes from Forest Plans that are being completed or are undergoing amendment. These projections are subject to change as a result of decisions made through the Forest planning and budget processes.

The timber sale program quantities projected are below the average annual volume sold in the early 1990s. Timber supplies are also below the 1990 RPA sale offering goal of 1.49 billion board feet for the period 1995-2000. The 1990 RPA goal was based on information developed prior to the amendment of Forest Service planning documents to reflect new information on management of habitat for northern and California spotted owls and other "old growth"-related species.

The Subregional Outlook

Based on the historical pattern of log flows to mills, the State can be divided into 4 major timber market areas: North Coast, Northern Interior, Sacramento and San Joaquin. The Central Coast and Southern California areas are minor producing areas. (Refer to Table H-3.)

Up until the 1990s, virtually all of the decline in the State's timber harvest that occurred over the last 30 years took place in the North Coast market area on private lands. The outlook now is for relatively stable output from private lands over the 10-15 year life of the Forest Plans in all major market areas.

Since the early 1990s the contribution of National Forests to regional timber supplies has declined sharply. During the 1980s, National Forests provided roughly 40% of the regional timber supply. In the mid-1990s and the future, they will provide roughly 25% of the timber available for processing by local mills on a State-wide basis.

The relative contribution of National Forests to the timber supply also differs between market areas of the State. In the North Coast area, private supplies are dominant and National Forests are projected to supply less than 2% of the timber. In the Northern Interior and Sacramento areas, National Forests supply roughly 30% of the timber. In the San Joaquin area they supply roughly 50% of the timber. The Klamath National Forest (Forest) feeds, to a varying degree, the North Coast and Northern Interior Timber Supply Areas.

Timber supplies from National Forests are projected to remain well below levels of the early 1990s. Since sawmill capacity exceeded available timber supplies in all major producing areas in the early 1990s, and many existing mills had not been upgraded to use the best currently available technology, mills have been closing in all areas of the State.

This pattern is expected to continue until there is a better balance between available supplies and sawmill capacity that employs the most efficient technology.

Closures are expected to continue in all areas of the State during the life of the Forest Plans.

The Subregional Outlook in the North Coast Timber Supply Area

Timber harvests from private lands in the North Coast area have recently averaged 1.1 billion board feet and are projected to be maintained. Industrial harvests are projected to decline from 900 MMBF to 780 MMBF. Nonindustrial harvests are projected to increase from 200 to over 300 MMBF annually.

National Forests recently have accounted for 170 MMBF or 13% of the timber supply in the North Coast. Under the National Forest Plans, National Forest supplies are projected to decline to 20 MMBF annually and make up less than 2% of total available supplies. The Six Rivers National Forest provides most of the National Forest timber milled in this area, with smaller amounts supplied by the Klamath, Shasta-Trinity and Mendocino National Forests.

The Subregional Outlook in the Northern Interior Supply Area

Timber harvests from private lands in the Northern Interior area have averaged 540 MMBF. This level is projected to be maintained. Industrial harvests are projected to decline from 480 MMBF to 450 MMBF. Nonindustrial harvests are projected to increase from 65 to over 95 MMBF annually.

National Forests recently have accounted for 600 MMBF or 53% of the timber supply in the Northern Interior. Under the National Forest Plans, National Forest supplies are projected to decline to about 250 MMBF annually. This makes up 26% of the total available supplies. The Klamath, Modoc, Lassen, Shasta-Trinity, Mendocino and Plumas National Forests are all major suppliers of timber milled in the area. Small volumes from other Forests have also been milled in the area (Six Rivers, Eldorado, Inyo, etc.).

Klamath National Forest Outlook for Timber Supply

Economies of communities within the boundaries of the Forest have historically been, and are today, strongly dependent on logging and sawmilling. The pattern of log flow and sawmill locations has changed significantly since World War II. In the late forties and early fifties, the sawmills that manufactured Forest

timber were primarily located within the Forest boundary. Today most mills that process timber from the Forest are located many miles away.

Thirty years ago, logs were usually hauled short distances from national forest land to the mill. As transportation systems became more efficient, logs could be more economically hauled longer distances. Coupled with this, the private supply diminished as private timber lands in the area completed the initial harvest. The reduction in timber from private lands increased the demand for National Forest timber in the area. Mills

were relocated from areas within the Forest to more centrally located sites that had better access to potential timber supplies from several National Forests.

Consequently, significant amounts of timber once manufactured into lumber locally are now transported to mills outside the county. These mills also employ loggers and millworkers from outside the area. The net effect of these mill relocations is a reduction in direct, indirect and induced employment related to logging and milling within the Forest. Some communities have been able to offset this job loss by effectively develop-

Table H-3. Recent Average Annual National Forest Timber Sales Compared to Projected Timber Sale Program Quantities

Timber Supply Area	National Forest	1989-91 Average Volume Sold, MMBF*	Projected Timber Sale Program Quantity, MMBF**
North Coast	Six Rivers	77	12-26
Northern Interior	Klamath (1)	118	50-70
	Modoc	51	30-40
	Lassen	147	60-80
	Shasta-Trinity	123	75-95
Sacramento	Mendocino (2)	39	10-15
	Plumas (3)	175	70-90
	Tahoe	88	50-60
	Eldorado (4)	166	50-70
	Lake Tahoe Basin	8	4-10
San Joaquin	Stanislaus (5)	117	30-40
	Sierra	99	60-70
	Sequoia	70	40-50
	Inyo (6)	8	8-10
	Total		1,286

(1) Typically about 50% of the logs from the Klamath National Forest flow into Oregon. Most of the remainder are milled in the Northern Interior area with a small amount flowing to the North Coast.

(2) Mendocino logs typically flow 30% to the Sacramento area, 30% to the Northern Interior area and 40% to the North Coast.

(3) Plumas logs typically flow 40% to the Northern Interior area, 60% to the Sacramento area.

(4) Eldorado logs typically flow 60% to the Sacramento area and 40% to the San Joaquin area.

(5) Stanislaus logs typically flow 20% to the Sacramento area and 80% to the San Joaquin area.

(6) Inyo logs typically flow 50% to the San Joaquin area and 50% to the Northern Interior area.

* MMBF = Million Board Feet

** All figures are subject to change as a result of decisions made through planning and budget processes. Forest Plans for the Six Rivers, Klamath, Shasta-Trinity and Mendocino National Forests are now being finalized. Forest Plans for all other Forests shown are undergoing amendment.

ing a recreation economy (notably Mt. Shasta), while others have not been able to adjust to the economic loss.

For 1987 through 1990, facilities in Siskiyou County processed 45% and Jackson County mills processed 21% of the volume harvested from the Forest. Humboldt, Josephine, Klamath and Shasta County locations together processed an additional 31% of the volume. In the same period, facilities in the following towns processed 80% of Forest volume: Yreka, 26%; Happy Camp, 15%; Ashland, 12%; Cave Junction, 7%; Klamath Falls, 6%; Eureka, 6%; Medford, 5% and Weed, 3%.

The average volume harvested per year from 1979 through 1989 on the Forest was about 200 MMBF. The ASQ in the Forest Plan and the Final Environmental Impact Statement ranges from 51 MMBF to 152 MMBF. At the high end, this amount is not sufficient to meet sell and harvest demand equivalent to those of the last 10 years. This will cause increased demand for timber from other National Forests and private lands. The amount of timber volume actually offered for sale in any particular year is dependent on Congressional authorization and agency distribution of budget.

