

**FINAL DRAFT**  
**Eastern Oregon Primary Wood Products Processing**  
**Facilities and Updates**

By  
Larry Swan, USDA Forest Service, State & Private Forestry and  
John Tokarczyk and Brandon Kaetzel, Oregon Department of Forestry

November, 2012  
(Revised May, 2013)



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## **Eastern Oregon Primary Wood Products Processing Facilities and Operations November, 2012<sup>1</sup>**

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Larry Swan, USDA Forest Service, State & Private Forestry, and  
John Tokarczyk and Brandon Kaetzel, Oregon Department of Forestry<sup>2</sup>

### **Introduction**

The purpose of this report is to provide an update about primary wood products processing facilities and operations in Eastern Oregon as of September, 2012 (see next section for definition of “primary processing”). Results are intended to improve understanding of the nature and interaction of wood products facilities and operations in Eastern Oregon, and inform discussions about how to improve the health and viability of remaining industry.

For this discussion, Eastern Oregon consists of the 17 Oregon counties east of the Cascade Crest (i.e. Hood River is not included). About 67% of Eastern Oregon’s “timberland” is within the National Forest System<sup>3</sup>. Over 80% of land classified as timberland is managed by the Forest Service in Baker, Deschutes, Grant and Harney counties, and over 60% in Crook, Klamath, Lake and Union counties (Todd Morgan, pers. comm., U. of Montana, Oct. 29, 2012 and Karen Wadell, pers. comm., USDA Forest Service, Pacific NW Research Station, Oct. 30, 2012). Forty-five “major” primary processing facilities or operations were identified in 11 Eastern Oregon counties. Lake County has the highest percentage of forest sector employment in Oregon (17%), followed by Jefferson (14%) and Crook (13%) (OFRI 2012, p. 48).

According to Ehinger (2012), 30 sawmills, 4 plywood plants, 3 veneer plants and 2 composite panel plants have closed since 1990 in Eastern Oregon. This has reduced log demand by about 1 billion board feet and resulted in the loss of about 3,800 direct manufacturing jobs. Roughly 2/3 of the job losses occurred between 1990 and 2000. Four sawmills have closed since the beginning of the recession in 2008: D.R. Johnson mills in Wallowa, John Day and Prairie City, and the Boise La Grande Sawmill. However, only the Wallowa mill has been liquidated. The Boise La Grande Sawmill partially re-opened in 2011 with a limited production schedule as “Mt Emily Lumber”.

### **Methodology**

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<sup>1</sup> Minor revisions to the text and map numbers, and addition of **Figure 5** and **Table 3** were completed in May, 2013.

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<sup>3</sup> **Timberland** - Unreserved forest land that is producing or capable of producing 20 cubic feet per acre or more per year at culmination of mean annual increment (MAI). Timberland excludes “reserved land”, which is forest land withdrawn from harvest consideration through statute or administrative regulations, such as national forest wilderness areas, and national parks and monuments (Karen Wadell, pers. comm., USDA Forest Service, Pacific Northwest Research Station, Oct. 30, 2012).

Thirty-nine of the 45 “major” primary processing facilities or operations identified in Eastern Oregon (87%) were interviewed or responded via email to a short list of questions between August and October, 2012. Company contacts ranged from owners to log/fiber buyers and Production Managers. Of the 7 companies that did not respond, the author had recent field notes from visits with 2 of the companies, wood products professionals provided non-proprietary information for 2 facilities, and information and estimates were developed for the remaining 3 from industry directories, web sites and other sources of public information. Efforts were also made to identify facilities in western Oregon and adjacent states that use Eastern Oregon fiber or logs for a portion of their supply. **Table 1** lists the businesses and contacts in Eastern Oregon that were interviewed or responded. The numbers next to businesses are keyed to locations on **Map 1** included at the end of this report.<sup>4</sup>

Interview questions focused on log and fiber consumption and specifications, current and potential processing capacity, employment, and what difference might it make in employment and supply needs if the facility or operation was able to run at “full capacity”. “Full capacity” was usually defined as two shifts per day and sufficient fiber or log supply to meet mill volume, species and diameter specifications. Biomass used to generate heat to dry lumber and veneer, or produce on-site electricity was not separately split-out from total facility raw material consumption.

“Primary” wood products processors are defined as manufacturers who produce wood products directly from logs, such as lumber, veneer, plywood, posts and poles, timbers, clean chips (i.e. for the pulp/paper industry), hog fuel (usually for biomass energy or mulch/soil amendment markets), and shavings (made from whole logs for animal bedding or pellet “furnish”). Also included for the purpose of this report are manufacturers who make products from bark, sawdust, and planer shavings, such as pulp and paper mills, composite panel plants (e.g. hardboard, particleboard and medium-density fiberboard [MDF]), mulch and soil amendment producers, densified wood fuel plants (e.g. fuel pellet and fireplace logs), animal bedding plants, and thermal and electrical energy facilities.

“Major” primary processing facilities were defined differently for different wood products sub-sectors in this report. For example, sawmills had to consume at least 1,200 green tons (GT) of logs or 180,000 board feet log scale (180 MBF)/yr, firewood operations had to process and ship at least 1,000 cords/yr, and mobile chipping operations had to ship more than 35,000 bone-dry tons (BDT)/yr.

Log home manufacturers were not included in this update nor were log furniture makers. The former because log specifications are often exacting and raw material supply may need to be imported from other states, and the latter because supply needs are usually much less than even the smallest business included in this update. Secondary manufacturers, who use primary processing products to make other products, were not included either, such as furniture and millwork (e.g. doors, windows, flooring and mouldings).

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<sup>4</sup> Facilities may be listed more than once depending on additional on-site processing capacities identified by owners.

**Table 1. – List of Eastern Oregon Facilities and Contacts**

Map No. <sup>5</sup>	Facility Name (Contact)	Type of Facility
1	Boardman Chip Co. Sawmill (Richard Dodge, President/Owner)	Stud Mill (chip mill and barge reload listed separately)
2	Prineville Sawmill (Craig Woodward, President/Owner)	Pine Sawmill (chip facility listed separately)
3	Blue Mtn. Lbr. Products (Richard Dodge, President/Owner)	Sawmill, Random Length Dimension, Large/Small Sides
X63	Blue Mtn. Millworks (Richard Dodge, Pres/Owner)	Sawmill, Specialty, Long Lengths, Timbers and Beams
5	Jeld-Wen Thomas Lbr. (no response)	Sawmill
6	Malheur Lbr. Co. (Mike Billman, Operations Forester)	Sawmill (log shaver, pellet/fuel brick plant listed separately)
7	Boise Cascade Elgin (Lindsay Warness, Policy Analyst)	Stud Mill. Large and Small Sides (also semi-stationary chip op.)
8	Collins Fremont Sawmill (Wade Mosby, Sr. VP)	Sawmill, Large and Small Sides
9	Boise Cascade Pilot Rock (Lindsay Warness, Analyst)	Sawmill, Large and Small Sides (also semi-stationary chip op.)
X64	D.R. Johnson, Grant Western (John Redfield, COO)	Sawmill, Large and Small Sides
X65	D.R. Johnson, Prairie Wood Products (John Redfield, COO)	Stud Sawmill
12	Boise Cascade Mt. Emily Sawmill (Lindsay Warness, Analyst)	Sawmill, Small Side (large side not in use)
13	Warm Springs Forest Products Industries (Gary Cantrell, Consult)	Sawmill, Large and Small Sides
14	Interfor Pacific (Chuck Burley, Timber Manager)	Sawmill, Large and Small Sides
15	Columbia Plywood (Mark Slezak, VP & Timber Manager)	Specialty Hardwood Plywood Plant
16	Boise Cascade Elgin (Lindsay Warness, Analyst)	Plywood Plant
17	Joseph Juniper (Gerard LaBrecque, Owner)	Specialty Juniper Sawmill (two portable mills)
X66	Juniper Mill at Reach (Bob Broadhead, JWTR Inc., GM, Timber)	Specialty Juniper Sawmill, Two Sides
19	Upper Columbia Sawmill (Tim Patton, Prod. Mgr.)	Specialty Hybrid Poplar Sawmill
X67	D. R. Johnson, COGENCO (John Redfield, COO)	Cogen. Biomass Power Plant (9.4 MW)
22	Boise Cascade Elgin (Lindsay Warness, Analyst)	Chip Operation, Semi-Stationary
23	Boise Cascade Pilot Rock (Lindsay Warness, Analyst)	Chip Operation, Semi-Stationary
24	Prineville Sawmill, Chip Facility (Craig Woodward, Pres/Owner)	Specialty Pine Sawmill (also semi-stationary chip operation)
25	Stafford Logging Chip Yard (Pete Foley, Fiber Buyer, WeyCo)	Chip Plant
26, 78	Boardman Chip Co (Richard Dodge, President/Owner)	Chip Plant and Barge Reload
27	Lee Smith Logging (Bob Broadhead, GM, Timberlands, JWTR, Inc.)	Mobile Chipping
28	Quicksilver, (John Williams, President/Owner)	Mobile Chipping and Grinding
29	T2, Inc. (Jeremy Totman, Business Ops. Mgr.)	Mobile Chipping and Grinding
30	Collins Hardboard (Wade Mosby, Sr. VP)	Hardboard Plant
31	Malheur Lbr. Co. (Mike Billman, Operations Forester)	Whole Log Shaver and Shavings Baling Plant
32	Great Northern (field notes, 2011)	Firewood
34	Central Oregon Firewood (not directly contacted)	Firewood
36	All American Timber Co. (field notes, 2009)	Post/Pole Plant
37	JTS Animal Bedding (Jim Wilson, Sales/Marketing)	Whole Log Shavers and Shavings Baling Plant
38	Round Tree Lodgepole Products (not directly contacted)	Post/Pole Plant
39	S. Oregon Round Stock (Bob Broadhead, GM, Timberlands, JWTR)	Post/Pole Plant
40, 75, 76	Integrated Biomass Resources (David Schmidt, President/Owner)	Firewood, Posts/Poles and Densified Fire Logs
X68	Bear Creek Timber Products (Mike Browning, President/Owner)	Post/Pole Plant
42	Blue Mtn. Lbr. Products (Richard Dodge, President/Owner)	Pellet Plant
43	Malheur Lbr. Co (Mike Billman, Operations Forester)	Pellet and Fuel Brick Plant
44	Woodgrain Millwork (Benjamin Barron, Director, Millwork Div.)	Pellet Plant
45	Pacific Pellets (Mark Stapleton, GM)	Pellet Plant
47	Collins Particleboard (Wade Mosby, Sr. VP)	Particleboard Plant
48	Boise Cascade Particleboard Plant (Lindsay Warness, Analyst)	Particleboard Plant
62	Jeld-Wen MDF, Klamath Falls (no response)	MDF Plant
79	Tidewater Chip Barge Reload (not directly contacted)	Chip Barge Reload

## Results

A total of 68 major primary processing facilities or operations in Oregon, Washington and Idaho were identified that use logs or fiber from Eastern Oregon: 45 in Eastern Oregon proper and 23 in western Oregon, Washington or Idaho<sup>6</sup>. Five major log or chip reloads were also identified. **Map 1** shows the locations of the 68 major users of Eastern Oregon logs and fiber, and the 5 log or chip reloads. **Table 2** provides key data for the 45 major primary processing and 2 chip barge reload facilities in Eastern

<sup>5</sup> Map numbers with “X” denote either temporary or long-term closure, but the facility still has equipment and machinery in place. Some map numbers are missing due to background GIS data table design.

<sup>6</sup> Although Blue Mtn. Millworks is located just across the state line in Washington (Walla Walla), it was included in “Eastern Oregon proper” because of proximity, management and ownership.

Oregon proper. **Appendices A-G** contain a list of interview questions used, tabular summaries of data, and assumptions used to convert and collate results.

The 45 major processing facilities or operations in Eastern Oregon include 11 open sawmills, 2 open plywood plants and 3 closed sawmills. The closed sawmills were included because although not operating, they still have all or most of their machinery intact, and their owners indicated willingness to consider re-opening if markets improve and there is sufficient log supply.

Besides sawmills and plywood plants there are:

- 5 stationary or semi-stationary pulp log chipping facilities or locations (one is currently closed);
- 3 major mobile chipping or grinding operations;
- 1 hardboard plant
- 9 “other” whole-log users, including:
  - 4 post/pole manufacturers (one is currently closed, but has plans to re-open);
  - 2 whole log shaving operations and 3 major firewood processors;
  - 3 "species-specific" specialty sawmills (1 is a large hybrid poplar sawmill, 1 a pair of portable juniper sawmills and the last a closed juniper sawmill with investor interest);
- 7 plants that use processing residuals (i.e. particleboard, MDF and densified wood fuel plants); and
- 1 stand-alone biomass energy co-generation plant in Eastern Oregon (temporarily closed, pending negotiation of an acceptable power purchase agreement (D.R. Johnson, COGENCO, Prairie City).

**Table 2. – Summary, Eastern Oregon Primary Wood Products Facilities/Operations and Barge Reloads**

<b>Map No.</b>	<b>Facility Name</b>	<b>Type of Facility</b>	<b>Current Number of Employees</b>	<b>Current Annual Raw Material Consumption<sup>7</sup></b>	<b>Est. % Full Capacity Utilized</b>
1	Boardman Chip Co. Sawmill	Stud Mill (chip mill & barge reload listed separately)	4	5.5 MMBF	50
2	Prineville Sawmill	Pine Sawmill (chip facility listed separately)	12	2.6 MMB F	22
3	Blue Mtn. Lbr. Products, Pendleton	Sawmill, Random Length Dimension, Large and Small Sides (pellet mill listed separately)	90 (includes logging sides)	Est. 13.5 MMBF	100
X63	Blue Mtn. Millworks, Walla Walla, WA	Sawmill, Specialty, Timbers and Beams	0	0	0
5	Jeld-Wen Thomas Lbr., Klamath Falls	Sawmill	Est. 56	Est. 28 MMBF	100
6	Malheur Lbr. Co., John Day	Sawmill (whole log shaver and pellet/biobrick plants listed separately)	76	27 MMBF	54
7	Boise Cascade Elgin Sawmill	Stud Mill. Large and Small Sides (chip operation listed separately)	114	36 MMBF	69
8	Collins Fremont Sawmill, Lakeview	Sawmill, Large and Small Sides	75	40 MMBF	76
9	Boise Cascade Pilot Rock Sawmill	Sawmill, Large and Small Sides (chip operation listed separately)	84	44 MMBF (large side only)	73
X64	D.R. Johnson Grant Western, John Day	Sawmill, Large and Small Sides	0	0	0
X65	D.R. Johnson Prairie Wood Products, Prairie City	Stud Sawmill	0	0	0
12	Boise Cascade Mt. Emily Sawmill, La Grande	Sawmill, Small Side (also has Large Side, but not currently used)	32	12 MMBF	17
13	Warm Springs Forest Products Ind.	Sawmill, Large and Small Sides	129	46 MMBF	48
14	Interfor Pacific, Gilchrist	Sawmill, Large and Small Sides	135	75 MMBF	30
15	Columbia Plywood, Klamath Falls	Specialty Hardwood Plywood Plant	215	22 MMBF	100
16	Boise Cascade Elgin Plywood Mill	Plywood	200	71 MMBF	100
17	Joseph Juniper, Burns	Specialty Juniper Sawmill (two portable mills)	8	Est. 1,200 GT	50
X66	Juniper Mill at Reach, Klamath Falls	Specialty Juniper Sawmill, Two Sides	0	0	0
19	Upper Columbia Sawmill, Boardman	Specialty Hybrid Poplar Sawmill	80 to 85	426,000 GT	50
X67	D. R. Johnson COGENCO, Prairie City	Biomass Cogen. Plant (9.4 MW gross)	0	0	0
22	Boise Cascade Elgin Sawmill	Chip Operation	6	Est. 30,000 GT	100

<sup>7</sup> “MMBF” is million board feet log scale and “GT” is green tons. Conversion used to derive “GT” from “BDT” (bone dry tons) is usually 100% (i.e. doubled), unless otherwise stated.

Map No.	Facility Name	Type of Facility	Current Number of Employees	Current Annual Raw Material Consumption <sup>7</sup>	Est. % Full Capacity Utilized
23	Boise Cascade, Pilot Rock Sawmill	Chip Operation	6	Est. 25,000 GT	100
24	Prineville Sawmill, Chipping Facility	Chip Facility	0	0	0
25	Stafford Logging Chip Yard, Prineville	Chip Facility	3 to 5	Est. 112,000 GT	100
26, 78	Boardman Chip Co.	Chip Plant, Barge Reload, and Small Log Mill	9 to 10	Est. 140,000 GT	37
27	Lee Smith Logging, Chemult	Mobile Chipping	12	Est. 80,000 GT	67
28	Quicksilver, La Pine	Mobile Chipping and Grinding	35	Est. 110,000 GT	61
29	T2, Inc., Sweet Home	Mobile Chipping and Grinding	35 + 20 subs	Est. 236,800 GT	51
30	Collins Hardboard, Klamath Falls	Hardboard Plant	116	Est. 84,000 GT	67
31	Malheur Lbr. Co., John Day	Whole Log Shaver	0	740 GT	42
32	Great Northern, John Day	Firewood	2	2,600 GT	53
34	Central Oregon Firewood, Bend	Firewood	Est. 7	Est. 4,400 GT	67
36	All American Timber Co., La Pine	Post/Pole	4 to 6	Est. 5,313 GT	44
37	JTS Animal Bedding, Redmond	Whole Log Shavers and Baling Plant	12	3,125 GT (logs)	21
38	Round Tree Lodgepole Prods., Crescent	Post/Pole	4 to 5	Est. 6,250 GT	35
39	Southern Oregon Round Stock, Worden	Post/Pole Plant	6	12,500 GT	50
40, 75, 76	Integrated Biomass Resources, Wallowa	Firewood, Posts/Poles and Densified Fire Logs	15	10,000 GT	40
X68	Bear Creek Timber Products, Seneca	Post/Pole	0	0	0
42	Blue Mtn. Lbr. Products, Pendleton	Pellet Plant	4	28,000 GT	100
43	Malheur Lbr. Co., John Day	Pellet and BioBrick Plant	4	17,000 GT	50
44	Woodgrain Millwork, Prineville	Pellet Plant	7	Est. 17,500 GT	44
45	Pacific Pellets, Redmond	Pellet Plant	10 to 14	28,000 GT (DF)	50
47	Collins Particleboard, Klamath Falls	Particleboard Plant (assume 35% MC)	72	Est. 113,400 GT	50
48	Boise Cascade Particleboard, Island City	Particleboard Plant (assume 35% MC)	95	Est. 182,250 GT	49
62	Jeld-Wen MDF, Klamath Falls	MDF Plant (assume 35% MC)	Est. 50	Est. 37,800 GT	Est. 100
79	Tidewater Chip Barge Reload, Boardman	Chip Barge Reload	Est. 4	Unknown	Unknown
<b>TOTAL</b>			1734	Not Additive	Not Additive

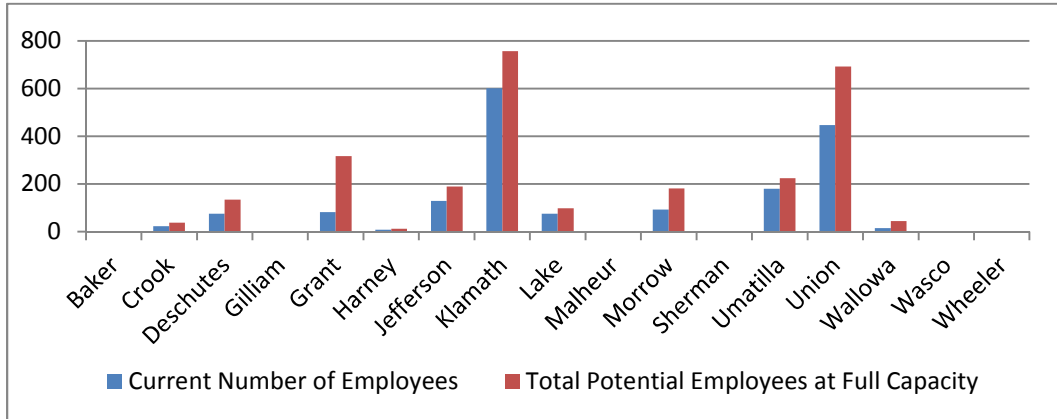
Depending on supply and prices, Eastern Oregon logs and fiber are shipped to at least 23 facilities outside of Eastern Oregon proper. These include 12 pulp/paper mills, most of them located along the Columbia or Snake Rivers, a charcoal briquette plant in Springfield, and 4 biomass energy producers (White City, Roseburg, Eugene and Lyons). Other non-Eastern Oregon purchasers include a post/pole operation in Idaho and a major firewood dealer in Lyons. Sawlogs are shipped at times to a reload facility in White City from Eastern Oregon, and both sawlogs and chips are trucked directly to 2 export docks in Coos Bay as supply and market prices allow. A densified wood fuel plant in Cascade Locks (i.e. wood pellets and “bricks”) purchases fiber on occasion from Eastern Oregon, but normally only Douglas-fir processing residuals (i.e. sawdust and shavings).

## Employment

Major primary processing facilities and operations in Eastern Oregon directly employ at least 1,730 workers with potential to increase to 2,741 workers (35% potential increase in employment), given adequate and sustained log and fiber supply, appropriate log sizes and species, and appropriate market conditions. See **Figure 1** for a chart comparing direct primary wood processing employment by county and potential total employment if facilities operated at full capacity. Klamath County currently has the highest direct employment in primary wood products processing (602), followed by Union (447) and Umatilla (180).

Given existing industry infrastructure, the counties with the greatest short-term potential to add wood products primary processing employment in absolute numbers, if all facilities and operations operated at full capacity are: Grant (234), Union (245) and Klamath (255). In relative terms, the counties with the highest potential increase in primary wood products manufacturing employment are: Grant (74%), Wallowa (67%) and Morrow (49%).

**Figure 1. - Current and Potential Direct Eastern Oregon Primary Wood Products Processing Employment by County**



**Log and Wood Fiber Consumption**

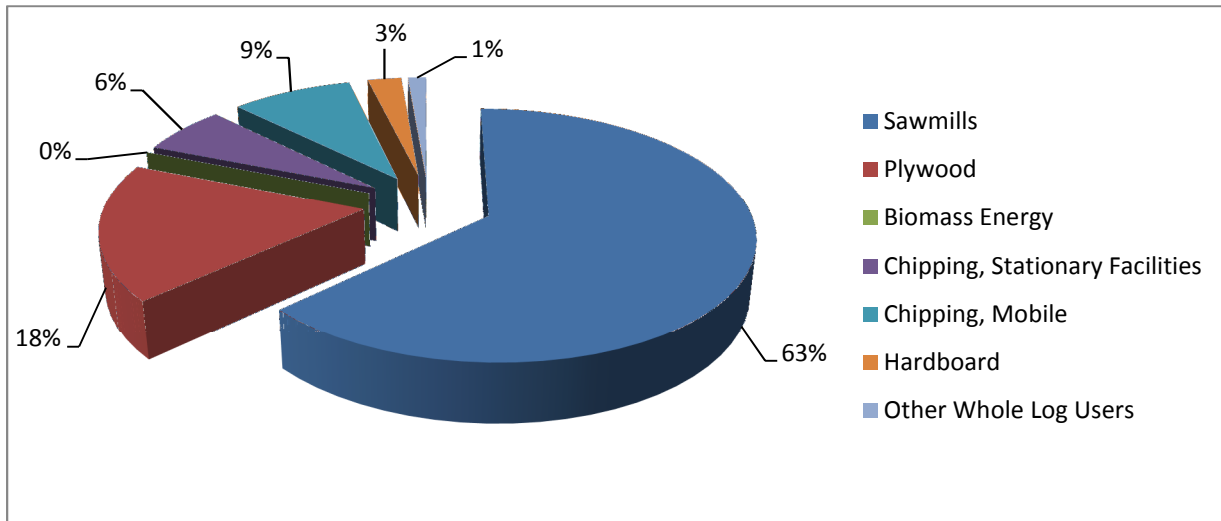
Sawmills are by far the largest consumers of logs of common commercial species in Eastern Oregon (about 329.6 MMBF or 2.1 million GT equivalent)<sup>8</sup>. The 11 open, non-specialty mills range from Prineville Sawmill (about 2.6 MMBF Scribner Eastside log scale) to Interfor Pacific, Gilchrist (about 75 MMBF). The next largest consumer of logs is plywood (93 MMBF or 604,500 GT equivalent), followed by mobile chipping/grinding operations (about 299,000 GT), stationary chipping facilities (about 215,000 GT), hardboard (84,000 GT) and “Other Whole Log Users”, such as post/pole plants, whole log shavings plants, and large, commercial firewood processors (about 45,000 GT total). The one biomass cogeneration plant in Prairie City is closed and was not included in “current consumption” (98,000 GT if running).

In total, open sawmills and plywood plants account for 81% of estimated log consumption by plants located in Eastern Oregon (63% by sawmills and 18% by plywood), followed by chipping facilities and operations (total of 15%, 6% stationary and 9% from mobile chippers or grinders), hardboard (2%), and “Other Whole Log Users” (1%) (e.g. post/pole, whole log shavings and large firewood processors). See **Figure 2** for a graphic display of wood fiber and logs used relative to major industry sub-sectors.

Two important Eastern Oregon wood products sub-sectors not included in **Figure 2** are: 1) Single-species "specialty sawmills" (about 427,000 GT); and 2) "Processing Residuals Users" (about 424,000 GT). In reality, just one specialty sawmill is responsible for almost all raw material reported utilized by “specialty sawmills”; the hybrid poplar sawmill in Boardman (Upper Columbia Sawmill). When the Upper Columbia Mill adds a second shift, it reportedly will be one of the largest hardwood sawmills in the U.S. A limited amount of raw material is also cut by small specialty juniper and other portable mills.

<sup>8</sup> Special Note: Units of measure, such as million board feet (MMBF) and bone dry tons (BDT) were converted to green tons (GT) for summary and gross comparative purposes. Sawlogs and veneer logs were converted using 6.5 GT/MBF, hardboard and whole log chipping BDT was converted to GT assuming 40% moisture content (MC), and particleboard BDT was converted to GT assuming 35% MC.

**Figure 2. - Current Raw Material Consumption (Green Tons) for Open Eastern Oregon Primary Processing Plants, Excluding Single-Species Specialty Sawmills and Facilities that Use Primarily Processing Residuals**



### Processing Residual Users

Sales of processing residuals are a critical concern for most primary processors, particularly sawmills. A common rule-of-thumb is that 45% to 50% of log volume ends up as “residuals”, including bark, chips, sawdust and shavings. If there are no economical outlets for processing residuals, sawmills and plywood plants normally cannot operate. There are currently 7 facilities that utilize processing residuals in Eastern Oregon, which in total utilize about 424,000 GT. The Collins Products hardboard plant in Klamath Falls is not included in this group because it uses primarily debarked, whole log chips. The 7 facilities include:

- 4 densified wood fuel plants (Blue Mtn., Pendleton; Malheur Lbr., John Day; Woodgrain Millwork, Prineville; and Pacific Pellets, Redmond);
- 2 particleboard plants (Boise Cascade, La Grande and Collins Products, Klamath Falls); and
- 1 medium-density fiber board plant (MDF) (Jeld-Wen, Klamath Falls).

The pulp/paper industry is probably the largest consumer of Eastern Oregon non-sawlog fiber. To put this in context, the largest sawmill in Eastern Oregon (Interfor Pacific, Gilchrist) uses about 488,000 GT/yr of logs to produce 75 MMBF annually. The Boise Inc. Wallula pulp/paper mill alone uses that much fiber from northeastern Oregon sources, which only represents about 40% of its annual fiber purchases (John Dick, pers. comm., Boise Inc., Wallula Mill, Oct. 16, 2012).<sup>9</sup>

It is assumed a portion of remaining processing residuals are used for on-site biomass energy uses (e.g. boilers to dry lumber and veneer, and generate electricity) or sold to the mulch/soil amendment industry. A strong indication that pulp/paper and alternative markets are paying better prices for processing residuals is that there is currently 400,000 GT of excess capacity in the processing residuals

<sup>9</sup> It is important to note that estimates for pulp/paper mill fiber consumption were based on a crude conversion factor for production to consumption, which does not take into account different product lines (i.e. 2.4 BDT wood chips/1 ton product). Also not included was any consideration of hog fuel purchased for the large pulp/paper mill boilers used to power operations. The Wallula pulp/paper plant is the one exception, where John Dick, Boise Inc. Fiber Buyer, was directly contacted.



subsector, which would be less if markets were better for these other products (e.g. particleboard, densified wood fuel, MDF or animal bedding).

### **Current Annual Raw Material Use and Projected Raw Material Needs at “Full Capacity”**

Eastern Oregon primary sawmills, chipping facilities and processing residual users (e.g. particleboard, densified wood fuel and MDF plants) operate on average at about 50% of their projected “full capacity”. The one exception is the plywood sub-sector with two plants in Eastern Oregon, who report running at 100% of capacity throughout the recession. The “Other Whole Log User” category, including post/pole manufacturers, whole log shavers and large firewood operations report overall capacity utilization of about 40%.

Projected log supply needed if all 45 facilities identified in Eastern Oregon were open and operating at full capacity increases 54% from 3.4 million GT to 6.3 million GT. The majority (79%) of the total increase would be used by sawmills and plywood plants, with the remainder going to stationary and mobile chipping operations (16%), and biomass energy, hardboard and “Other Whole Log Users” (2%).

### **Species Preference**

In general, there are two main types of sawmills in Eastern Oregon - those that concentrate on producing lumber graded for strength and those that produce lumber graded for appearance. The three “stud” mills (Boise Elgin, Boardman Chip Co. and D.R. Johnson’s Prairie Wood Products) and the one “random length dimension mill” (Blue Mtn. Lbr. Co.) concentrate on the former, and the remaining mills the latter. Stud and dimension mills in Eastern Oregon prefer interior Douglas-fir and white fir, but will also use Engelmann spruce, lodgepole pine and sub-alpine fir. The other sawmills, possibly with the exception of Warm Springs Forest Products Industries (WSFPI), cut “appearance grades” and some dimension lumber (i.e. 2X4, 2X6 etc.). These mills prefer ponderosa pine, but will use white fir if logs are high-enough quality. WSFPI, due to its resource supply, tends to be somewhere in-between an old growth Douglas-fir western Oregon mill and an Eastern Oregon pine mill.

The remaining “appearance grade” sawmills are even more differentiated. For example, Prineville Sawmill concentrates on cutting pine for the “factory” or “industrial” market (i.e. 4/4, 5/4, 6/4 etc.) and Blue Mtn. Millworks, located just across the state line in Walla Walla, WA, custom cuts for the timber and beam market. The two plywood mills can use a variety species for “core”, but prefer white fir, Engelmann spruce, lodgepole pine and sub-alpine fir. Interior Douglas-fir and larch are also used, but not preferred.

Species preferences of primary processors in the “Other Whole Log User” category vary:

- Post/pole plants tend to prefer lodgepole pine because of less taper, less bark, lower GT/volume ratio (i.e. more volume per truckload compared to other species) and better ability to take chemical preservatives than alternative Eastern Oregon species. However, more and more ponderosa pine is being used and accepted in the market place;
- Whole log shavers tend to prefer pine instead of white fir for the animal bedding market because of odor and mildew issues;
- Densified wood fuel plants prefer 100% Douglas-fir furnish because of higher heat value and lower ash content than other species, especially for the “premium” residential market. However, most Eastern

Oregon pellet manufacturers have no choice, and use pine and some white fir. Pine pellets have a lower price in the marketplace, but sell better into the animal bedding market;

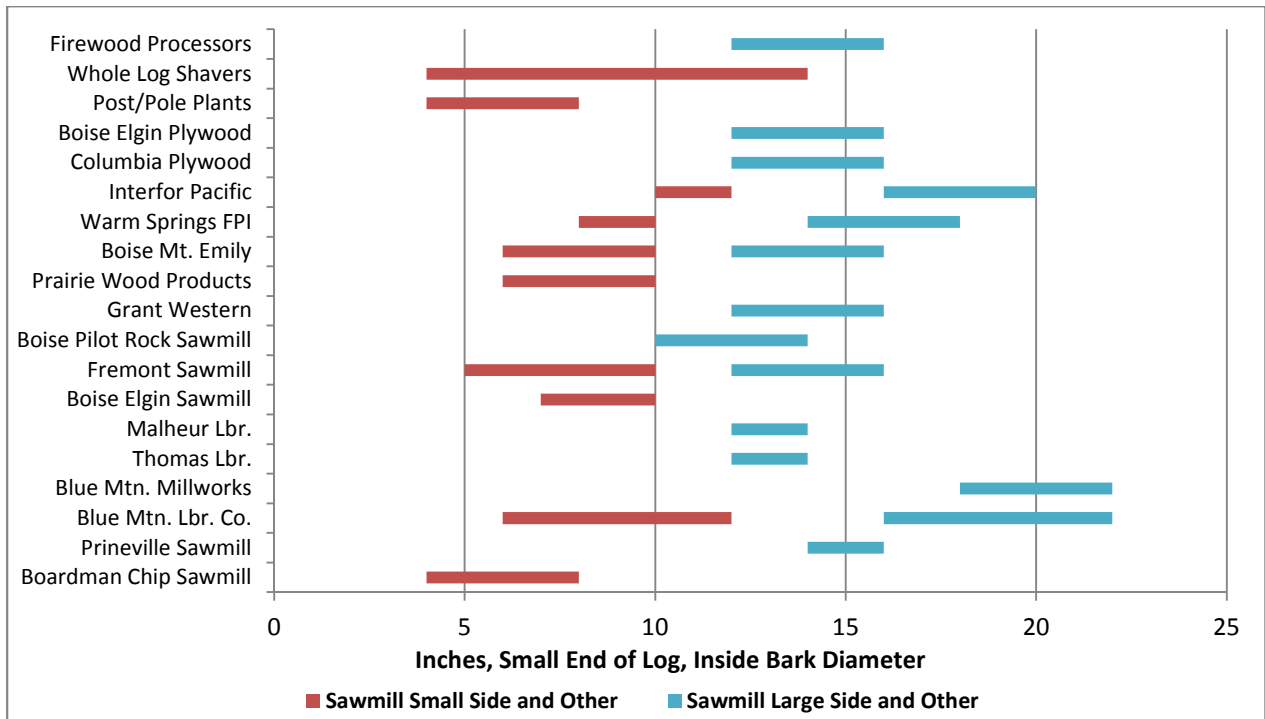
- The one hardboard mill is unique in that it accepts a small amount of juniper for use in its surface layers as does the one MDF plant (both in Klamath Falls);
- The pulp/paper industry prefers “white woods”, such as lodgepole pine and white fir, because they help brighten certain product lines, but accepts other species as well, with the exception of cedar; and
- Composite panel plants, such as particleboard, prefer higher amounts of pine because it produces a better surface finish than Douglas-fir. Similar to the pulp/paper industry, use of cedar processing residuals by composite panel plants is limited.

### Log Diameter Preference

Most primary processing plants in Eastern Oregon have log diameter as well as species preferences. A general characterization of preferred economic log diameter, as measured “small-end, inside bark” (i.e. log scaling cylinder), is provided in **Figure 3** below. “Preferred economic log diameter” is defined as the log a mill can process most efficiently and profitably over the long-run. This definition does not include log segment length, which can also be a key factor.

The terms “small side” and “large side”, as used in **Figure 3**, refer to different primary log breakdown systems. Most Eastern Oregon sawmills have two sides, one for larger logs and one for smaller. Preferred economic diameter ranges are also shown for the firewood, whole log shaver and post/pole primary processing sub-sectors. It should be noted that firewood preferred diameter range (12”-18”) reflects use of higher-speed firewood processors, which mechanize log bucking and splitting.

**Figure 3: Preferred Economic Log Diameter Sizes (small end diameter, inside bark, in inches)**



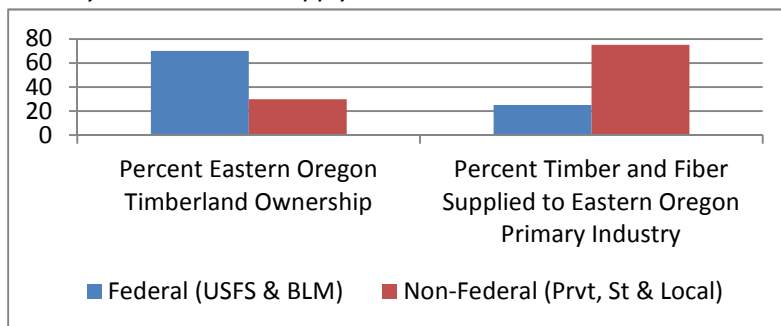
The data presented about “preferred economic log diameter” should be read and interpreted with caution. The primary reason data were gathered was to illustrate potential competition for certain log

diameters. However, results are difficult to interpret unless comparisons are confined to similar types of mills or operations. For example, it may appear that major firewood operations use the same log preferred by plywood mills and some sawmills. However, firewood processors far prefer standing dead to green timber, and actually compete for similar material as chipping facilities and operations, at least when there is a good market for pulp chips.

**Federal vs. Non-Federal Supply, and Changes in Wood Products Primary Processing Infrastructure**

Interviews conducted for this report indicate that current raw material supply for the Eastern Oregon primary wood products processing industry as a whole is split about 75% non-federal and 25% federal (almost all Forest Service). This is in contrast to timberland ownership, which is 30% non-federal and 70% federal (see **Figure 4**) (Karen Waddell, U.S. Forest Service PNW Research Station, pers. comm., Oct. 30, 2012). Industry sub-sector land ownership/supply ratios range from a high of 90+% non-federal for plywood, hardboard and specialty mills (i.e. the hybrid poplar sawmill) to a low of 45% non-federal for “Other Whole Log Users” (e.g. post/pole manufacturers, whole log shaving operations and larger commercial firewood processors). Overall, Eastern Oregon sawmills average about 63% non-federal supply. Long-term industry professional believe that the average annual landownership/supply ratio during the decade of the 1980s was more reflective of forested landownership (i.e. about 70% federal and 30% private).

**Figure 4. – Eastern Oregon Timberland Ownership vs. Primary Processing Industry Raw Material Supply**



Another way to look at private vs. federal supply, and its link to mill infrastructure, is to plot these variables using timber harvest data maintained by the Oregon Department of Forestry (ODF) and annual data about open mills (see **Figure 5**) (Ehinger 2012, and John Tokarczyk and Brandon Kaetzal, ODF, pers. comm., Apr. 25, 2013). The average annual federal vs. private supply ratio through the decade of the 1980s, per the recollection of long-term industry professionals, appears to have been close to the federal/private timberland ownership ratio of 70:30. The “mirror image” visible on the graph during the 1980s probably reflects response from private landowners as federal supply peaked and then dropped. The graph then inverts beginning in the early 1990s to something closer to 30% federal and 70% private harvest. This trend continues through about 2006, when private harvest begins to drop again, but federal harvest remains about the same, becoming closer to 50/50 by about 2008. A major caveat is that the nature of federal supply has changed over time and now includes much more biomass (i.e. non-sawlogs) and fewer traditional sawlogs (e.g. 12-in DBH and larger).

**Figure 5. – Eastern Oregon Timber Harvest vs. Open Mills, 1980 – 2011**

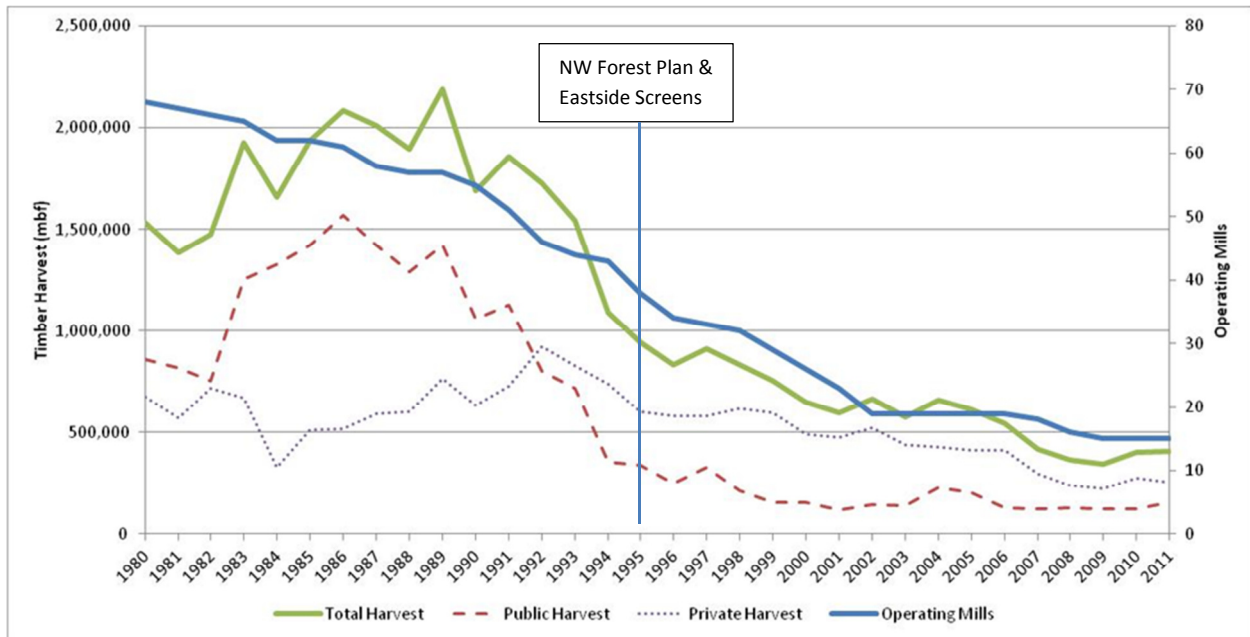


Figure 5 also indicates that mill infrastructure has been shrinking since at least 1980, paralleling the general reduction in overall log supply (see solid blue line). There was a leveling off from about 2002 to 2007, perhaps reflecting increase in market demand due to new housing starts, but then the number of open mills dropped again slightly and has plateaued from about 2009 to the present. It is recognized that the number of open mills over time is a crude measure of mill capacity, however, historic log and fiber consumption were not able to be calculated with any degree of accuracy from production data due to lack of information about individual facilities (see Keegan et al. 2010 for a more thorough explanation of lumber recovery calculation issues).

Eastern Oregon operating mills by type are summarized in Table 3 below for 1980, 1994, 2007 and 2012. About 20% of the total number of mills open in 1980 remain, with the greatest decrease in veneer plants (0 remain), followed by sawmills, plywood plants and board mills (i.e. particle board, hardboard and MDF) (17%, 25% and 80% remain respectively) (Ehinger 2012 data, summarized by John Tokarszyk and Brandon Kaetzel, ODF). The decrease in plywood and veneer plants is partly due to supply changes, but also introduction of cheaper replacement technologies, such as Oriented Strand Board (OSB) and new MDF products for applications where plywood was previously used.

**Table 3. – Eastern Oregon Open Mills by Type, 1980 - 2012<sup>10</sup>**

Year	Sawmills	Plywood	Veneer	Particle Board, Hardboard & MDF	Pulp/Paper	Total
1980	48	8	6	5	0	67
1994	28	8	4	4	0	44
2007	12	3	0	4	0	19
2012	8	2	0	4	0	14

<sup>10</sup> Information source for this table used a minimum production figure of 2.5 MMBF/yr for sawmills.

## **DISCUSSION AND INTERPRETATION**

### **Recent Relevant Reports**

At least three relevant major reports were published during the four month span this report was being researched and prepared. Two of the reports addressed the status and trends of forestry and the forest products industry in Oregon (OFRI 2012 and Gale et al. 2012), and the other assessed the economic impacts of current and potential forest restoration activities on Eastside National Forests (State of Oregon 2012).

The current report differs in several key ways from these other recently published reports:

- Geographic Focus – This report is focused only on Eastern Oregon wood products facilities and operations, not the entire state or unrelated portions of the state;
- Accurate Map – GIS-based map was compiled of industry locational information, which can be manipulated for future analyses;
- Primary Sources and Up-to-Date Information - Data were collected first-hand primarily from owners, managers and key support staff during the last half of 2012, which makes it a relatively up-to-date “snapshot” in time;
- Small to Large Businesses Included – Businesses included in this report ranged from comparatively small, e.g. post/pole operators and commercial firewood processors, to large pulp/paper mills;
- Industry Insights – Many topics covered are not addressed elsewhere, such as mill diameter and species preferences, nature and extent of log and wood chip flows into and out of Eastern Oregon, competition in the industry segment that uses sawmill and other processing residuals, and changes in supply sources over time;
- Individual Business Data –Permission was obtained by the firms interviewed or visited to break-out and display non-proprietary data. This is particularly important in Eastern Oregon because with fewer facilities, it would have been necessary to combine unrelated sub-sectors, which would have reduced the value and ability to interpret results; and
- Industry Trends and Challenges – Trends and challenges specific to Eastern Oregon industry are examined, ranging from the growth of biomass institutional heating markets to family business succession; and

### **Current Industry Infrastructure Status and Market Niches**

Nine key primary processing facilities or clusters were identified in Eastern Oregon:

- 1) Lakeview;
- 2) Klamath Falls;
- 3) Gilchrist;
- 4) Prineville;
- 5) Warm Springs;
- 6) John Day;
- 7) Boardman;
- 8) Pendleton/Pilot Rock; and
- 9) Elgin/La Grande.

Lakeview and Warm Springs have historically sourced supply closer to their processing centers because of legal or traditional supply and sourcing practices. Fremont Sawmill, the one remaining sawmill in the Lakeview area, participates in a Federal Sustained Yield Unit (also known as the Lakeview Federal

Stewardship Unit) and WFSI has historically used timber only from within The Confederated Tribes of Warm Springs Reservation. However, there have always been on-going discussions about competing for timber outside the reservation and things could change rapidly, especially since the WSFPI mill had to temporarily close this year (2012) due to lack of logs. There are also primary processing centers developing near Burns, related to western juniper, and Wallowa, related to merchandising pulp logs for a variety of products.

Examples of niches that sawmills and other primary processing plants have used to partially mitigate lack of federal timber supply and impacts of the recession include:

- Integrated Wood Products Businesses –Dodge Logging (Richard Dodge) has acquired a string of businesses over the last 20 years that complement each other, making it the only integrated family-owned wood products business remaining in Eastern Oregon and Eastern Washington. The purpose is to mitigate the ups-and-downs of inevitable wood products market cycles. A smaller-scale example of the integrated or complementary business model is Integrated Biomass Resources, Wallowa;
- Merchandising Pulp Logs – Several companies are debarking and bucking out sawlog segments from pulp logs to obtain higher total value;
- Increasing Value of Processing Residuals – Companies have made investments over the last five years to increase the value of processing residuals by installing densified fuel plants and planer shavings bagging operations;
- Integrating Composite Panel Plants with Primary Processing Facilities – Several companies own and operate composite panel plants, which use residuals from their own and other primary processing plants to make composite panels, such as particleboard and MDF. Apparently the return from using residuals in composite panel products is better than densified wood fuel products, such as pellets;
- Whole Log Chipping for the “Spot Market” – Several Eastern Oregon facilities stockpiled, debarked and chipped pulp logs to take advantage of a recent good chip market for pulp/paper, even though they do not normally chip specifically for the pulp/paper market;
- Plywood Markets – Columbia Plywood’s specialty hardwood plywood and Boise Cascade’s Elgin structural plywood serve two very different market segments, but both managed to run at “full capacity” during the Recession;
- Production and Marketing Agreement with an Outside Entity – One of the more unique and creative business agreements involved Vanport International helping WSFPI process and market Forest Stewardship Council (FSC)-certified lumber production for international markets; and
- FSC Certification – At least three businesses or business partnerships with sawmills and timberlands or tree plantations have obtained FSC certification for their forests and chain-of-custody for their mills. FSC certification improves access to certain markets and customers, such as Europe and certain “big box” home improvement stores. No federal forestland is currently FSC-certified in Eastern Oregon.

## **Hardboard**

The Collins Hardboard plant in Klamath Falls is unique in terms of the type of fiber it can incorporate in its product line. The plant began experimenting with western juniper in the early 1990s when it was still owned by Weyerhaeuser Co. Currently, Collins representatives indicate they are willing to purchase juniper for up to 20% of total supply because it provides a finer texture and more water repellent surface layer than pine. Hardboard can also usually absorb more bark than other composite panel products, such as particleboard or MDF. This means chips can sometimes be made from logs debarked in the woods with a chain flail, especially if they have been left long enough for the bark to loosen up and wood moisture content is below 30%. Incoming raw material still has to have less than 3% bark

content though, and juniper still has to be delivered at a price the plant can afford, which has been a challenge (Wade Mosby, The Collins Companies, pers. comm., Sep. 14, 2012).

### **Other Whole Log Users**

In 2002, the Eastern Oregon post/pole industry ranked second in production in the U.S. behind only Montana (Burke and Swan 2002). Production has decreased about 50%, but its potential is still substantial because of under-utilized capacity. In fact, the Southern Oregon Round Stock plant near Klamath Falls is potentially one of the largest in the Western U.S. and, according to company representatives, could be the unquestioned leader if there was sufficient supply at the right price.

Eastern Oregon also has a thriving firewood industry. Expansion will be difficult in the future for many firms though, if some states, especially California, require heat treatment to reduce the risk of introducing pests. At least one Eastern Oregon firm is heat-treating firewood and plans to increase capacity because of demand from larger buyers. In addition, several whole-log shavers, which tend to compete for similar logs, have been installed in Eastern Oregon over the last couple of years. Whole-log shavers are intended to take advantage of market space opened-up by the reduced supply of planer shavings because of sawmill closures and curtailments during the recession (e.g. JTS Animal Bedding and Malheur Lbr. Co.).

One of the biggest challenges for small businesses that comprise the “Other Whole Log User Category” is availability and cost of log supply. Log specifications for post/pole and whole log shaver plants overlap somewhat with small sawlogs, in which case sawmills will be able to pay more, especially as the framing lumber market improves (see **Figure 3** above, *Preferred Economic Log Diameter Sizes*). There is also competition from chippers/grinders if the pulp/paper market is high, as it was for the last couple of years. One way to mitigate the higher cost of small logs is to install a merchandizing line to obtain optimal log diameter sizes for a particular operation, and sell remaining logs and log segments to sawmills and chippers. However, this requires more capital than most small processors are willing or able to invest.

An interesting small-scale approach to an integrated biomass operation is Integrated Biomass Resources, Wallowa. The facility, located on the site of the former Wallowa Forest Products sawmill, will eventually combine a log merchandizing line with a variety of processing and market options, including sawlogs, firewood, post/poles, densified fire logs, clean chips for pulp/paper and hog fuel. A small Rankine-cycle biomass power unit has also been incorporated (two 50kw units) which takes care of the thermal energy needs for heat-treating firewood and on-site power requirements, with 30%-40% of the remaining electricity to be sold and put on to the grid. Although small-scale, the facility has the potential to make a substantial contribution to manufacturing employment in an isolated rural area with few other options (currently 15 employees with plans to double employment by the end of 2013) (David Schmidt, pers. comm., Integrated Biomass Resources, Dec. 3, 2012).

### **Species-Specific Specialty Sawmills**

Species-specific “specialty sawmills” increased their presence in Eastern Oregon over the last four years. This is positive not only for employment, but also workforce development. The Upper Columbia

Sawmill, Boardman, located within the 21,000 ac Greenwood Hybrid Poplar Plantation, is the equivalent of a medium- to large-sawmill in terms of production. According to management, when this mill goes to two shifts it will be one of the largest hardwood mills in the U.S. (120 MMBF) and employ an additional 80-85 workers, not including loggers, truckers and other indirect jobs.

There are also more small sawmills cutting juniper. The largest one in Klamath Falls (JMAR) is currently closed, but according to the owner there has been buyer interest. The other juniper operation listed in this update started with one sawmill in 2011 and added another last year (Joseph Juniper, Burns). In addition to these two operations, there are at least two other semi-portable mills that cut juniper on a regular basis (Powell Butte and Fossil). Although the market and number of people involved in the juniper milling are small by regular sawmill standards, there appears to be market demand and production is growing.

### **Other Composite Panel and Densified Wood Fuel Facilities**

Two particleboard plants remain in Eastern Oregon, both of which serve a critical function for sawmills and veneer plants by helping to dispose of processing residues. Particleboard furnish though, has become increasingly difficult to source at a price the two plants can afford because of competition from the pulp/paper and fuel pellet industries.

Unlike particleboard production, Eastern Oregon densified wood fuel production (primarily wood fuel pellets) is relatively new, with most of it added within the last five years. However, the U.S. residential fuel pellet market is very competitive. Based on residential pellet stove sales trends, the overall residential fuel pellet market appears to be growing less than 3% per year, which is not enough to absorb additional capacity (Elliot 2009).

The rationale for existing businesses to install a densified wood fuel plant is to obtain a higher net price for processing residuals rather than trucking and selling them to distant composite panel plants (e.g. particleboard and MDF), pulp/paper plants or other densified wood fuel manufacturers. It is much more challenging economically for stand-alone densified wood fuel producers, who have to purchase all their raw material supply from outside sources. A disadvantage shared by all Eastern Oregon fuel pellet manufacturers is that pine pellets are sold at a lower price than Douglas-fir because of lower heat values and higher ash content. However, pine pellets sold into the animal bedding market can have higher acceptance, at least according to some manufacturers. There also appears to be good potential to increase institutional wood heating installations in Eastern Oregon (i.e. hospitals, schools and other public buildings and complexes) because much of the area is not served by existing natural gas pipeline networks.

Besides institutional heating installations, some densified wood fuel manufacturers continue to explore the export pellet market, but the raw material volumes required (hundreds of thousands of tons per year instead of tens of thousands of tons), lower prices, and cost of port access and bulk loading infrastructure have thus far discouraged most manufacturers from taking a more active approach.



### **Stationary and Mobile Chippers and Grinders**

The size and scope of mobile chipping and grinding operations increased over the last five years, as indicated by the three firms included in this assessment (T2 Inc., Quicksilver and Lee Smith Logging). Growth in this industry sub-sector was helped for a couple of years by state and federal programs that subsidized transport of woody biomass (i.e. hog fuel) to facilities that used it for heat, energy or heat and energy. Subsidy programs included the federal Biomass Crop Assistance Program (BCAP) (began 2009, but was then amended to exclude most non-plantation biomass operations) and State of Oregon Biomass Producer or Collector Tax Credit Program (initially provided a tax credit of \$10/GT, now reduced to \$10/BDT). These incentive programs coincided with an uptick in the pulp/paper chip market. Additionally, there was increased Forest Service and Bureau of Land Management (BLM) emphasis on biomass removal from timber sales and other contracts instead of open burning of piles. It is unknown how much longer the State of Oregon transportation subsidies and federal land management biomass removal emphasis will continue and at what level.

### **Biomass Energy**

As of September, 2012, the only stand-alone, industrial-size biomass energy plant in Eastern Oregon was still closed (CONGENCO, Prairie City). Company management states they are negotiating for a better price for power. If successful, and if more Federal timber is put on the market, they will also consider re-starting Prairie Wood Products, a stud mill that uses steam from the power plant to dry lumber (John Redfield, pers. comm., D.R. Johnson, Sep. 18, 2012).

There is currently no indication, at least in the short-term, that industrial-size, stand-alone biomass energy plants<sup>12</sup> will be constructed in Eastern Oregon due to low Power Purchase Agreement prices for electricity and uncertain energy pricing arrangements for power sold into the California market. These risks and uncertainties contributed to Iberdrola Renewables decision to mothball, but reportedly not abandon, construction of a co-generation project in Lakeview in 2011 (Anders Bisgard, pers. comm., Iberdrola Renewables, Jan. 17, 2012). There are also two biomass energy proposals in the Klamath Falls area going through the permitting process: Iberdrola Klamath Falls (35 MW) and Northwest Energy Systems Co. (NESCO) Klamath Falls Bioenergy (42 MW).

A bioenergy market receiving more attention in Oregon is “institutional thermal” applications (e.g. space and water heating). Both the Oregon Department of Energy and U.S. Forest Service have recently made investments to expand this market, especially in Eastern Oregon. The reason Eastern Oregon is so attractive for these types of investments is that there are large areas without access to natural gas, and a longer and colder heating season. Larger buildings or complexes of buildings make economic comparisons of woody biomass systems with propane or heating oil even more attractive. Since 2008, at least 10 small-scale biomass thermal installations have been installed in Eastern Oregon, ranging from a hospital to a small industrial complex. Most of these installations chose wood fuel pellets made from processing residuals because of operational efficiencies and lower capital investment, at least at this scale.

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<sup>12</sup> “Industrial” size biomass energy plants are arbitrarily defined as greater than 0.5 MW gross generation output.

## "Full Capacity" Projections

The employment and consumption projections described in the previous "Results" sections need to be considered and interpreted in the context of the definition of "full capacity" used in this report. "Full capacity" is a theoretical projection since it relies on a number of critical factors:

- "Adequate and sustained fiber or log supply", which may or may not exist in the optimal mix of species and sizes for a particular mill or operation (i.e. there simply may not be enough medium-size pine sawlogs to go around);
- Competitive log prices;
- Adequate financing; and
- Reliable and experienced workforce.

The ability to obtain a reliable and experienced workforce may not be as easy as many might believe, even given high unemployment in Eastern Oregon. Numerous mill closures over the last 20 years and more recently, semi-permanent curtailments, have forced many former employees to change careers, move out of the area to find other work or retire. Employee screening has also increased due to insurance requirements. However, even though difficult, most currently-open mills have retained enough key employees and managers to train new workers if the right circumstances arise. The Upper Columbia Mill, managed by Collins Products, is an example of what can be done given supply certainty, adequate financing, professional and experienced management, and aggressive marketing. It was the first new mill in Eastern Oregon in over 25 years when it began operation in 2008 and should be adding a second shift soon.

## Timber Landownership vs. Supply Ratios, and Primary Processing Industry Changes

Timber harvest data compiled by ODF shows that at least through the 1980s, Eastern Oregon private timberlands had sufficient supply elasticity to increase harvests when federal supply decreased and vice versa. However, beginning in the early 1990s, the ability or willingness of Eastern Oregon private timberland owners to respond to reductions in federal supply apparently decreased. A few plateaus in the downward trend of private timberland supply during the 1990s might be attributed to increased harvest by Timber Investment Management Organizations (TIMOs) or because of interfamily asset changes, but this is unconfirmed. It is significant there was not a visible bump up in private timberland harvest during the run-up in markets due to the housing bubble, which ended beginning in 2007 for the timber industry. Federal timber harvest, on the other hand, leveled off in about 1999 and has remained about the same until the present; however, with a drastically different ratio of sawlogs to biomass than the 1980s and early 1990s, reflecting increased federal agency emphasis on thinning and hazardous fuels treatments.

Sawmill numbers have been decreasing in throughout Oregon since at least the late 1950s and 1960s. Mills had to consolidate and increase efficiencies to compete, and capitalization requirements were beyond the reach of many operators. An attempt to broadly characterize a few selected measures of sawmill productivity is presented in **Table 4** below for the period 1990 - 2009, using data from Ehinger (2012) and this report. Briefly, productivity per sawmill employee has increased at least 10%, average production per facility is up by at least 10%, and there are about 20% fewer employees per facility.

One explanation for why productivity has not increased even more is that more personnel and equipment time are required in Eastside mills to obtain higher value, appearance grade pine lumber for its historic use in the millwork industry. This contrasts with the efficiencies possible in producing framing lumber from Douglas-fir and hemlock, which have more consistent log form and appearance is not as important. Even when pine is processed for the framing lumber market, there is higher cost on a per MMBF basis because according to lumber grading standards, pine has to be kiln dried whereas Douglas-fir can be sold “green” (i.e. with more than 18% moisture content). There is also less overall supply available on the Eastside because of the extent of federal land ownership, which affects mill design and operations and flexibility needed for economies of scale.

**Table 4. – Changes in Selected Sawmill Productivity Measures for Closed and Open Eastern Oregon Sawmills, 1990 - 2012**

<b>Data Category</b>	<b>Avg. Production/Sawmill (MMBF)</b>	<b>Avg. Employees/Sawmill</b>	<b>Avg. Employees/MMBF</b>
1990 – 2009, Closed Sawmills (n = 30) (Ehinger 2012)	45.1	95.6	2.1
2012, Open and Closed Sawmills With Equipment (includes Upper Columbia Specialty Hybrid Poplar Mill) (n = 13)	48.8	74.3	1.9
2012, Open Sawmills Only (includes Upper Columbia Sawmill) (n = 10)	54.3	86.1	1.6
Percent Difference Between Mills Closed Between 1990-2009 and Open Mills 2012	17% More Production Per Sawmill	10% Fewer Employees Per Sawmill	24% Fewer Employees Per MMBF

## **CONCLUSION**

Eastern Oregon wood products primary processing infrastructure has become noticeably sparse over the last 20 years. Open mills have declined nearly 70% since 1994 and average distance between mills is often 100 miles or more. There is also limited access to rail and river barges in most areas to help move products to market at lower cost over the long distances. The decline in mill infrastructure means there is limited competitive overlap in some areas between comparable facilities. When this occurs, there is less competition for logs and stumpage prices typically decline because only projects and timber sales with higher value and volumes of sawlogs obtain multiple bids. This environment challenges the likelihood of achieving management objectives on all but the most productive timberlands. Additionally, disposition of low-value biomass is even more problematical, increasing the probability of open pile burning with attendant smoke management issues. Beyond these concerns, the impacts of mill closures on rural unemployment and social structure of small communities are magnified as well.

Two significant challenges faced by the surviving wood products primary processing industry over the last 20-year period have been the prolonged recession, and reduction in both private and federal supply. Many long-term wood products professionals agree there have been low prices and demand for two and three years at a time in the past, but none have experienced the length and severity of the current recession which began for most of the wood products industry in 2007 and is only just beginning to show signs of reversal. The reduction in federal timber supply and increased harvest on private lands have also created serious issues, which in many respects are longer-lasting.

Based on timber harvest data, it appears during the decade of the 1980s most Eastern Oregon sawmills had average annual land ownership/raw material supply ratios of about 70% federal and 30% private,

similar to the federal vs. private forestland base ratio. In the 1990s though, given drastic reductions in federal harvest, if sawmills were to stay open they had to increase their cut on their own and/or other private lands. At the same time, there may have been pressure to increase private land harvest because of interfamily land ownership transfers and some conversions to TIMOs (Timber Investment Management Organization), but this has not been formally studied. In any case, the timberland landownership to supply ratio quickly inverted over just a few years to an annual average closer to 30% federal and 70% private until about 2008, when it became closer to 50/50. At this point, most Eastern Oregon sawmills no longer have a reserve of private sawlog-size timber to backfill lack of federal supply. This in turn drastically affects the ability of the remaining smaller, family-owned sawmills to obtain financing and remain in business because there is insufficient collateral available in the form of standing timber.

Critical factors that will determine the survival of a competitive primary processing infrastructure in Eastern Oregon include markets, supply, transportation costs (i.e. diesel prices), financing, workforce availability and management succession in family-owned enterprises. With respect to succession, challenges develop when family members, including those who may have worked in various roles for years, lose interest in maintaining business operations. Reasons vary, but invariably concerns about long-term economic viability of small wood products businesses in competitive markets, uncertainty about federal supply, price instability, and the emotional and financial toll of frequent wood products business cycles are mentioned. Given these circumstances, the logical next step might be to sell the business to a buyer who is interested in continuing operations, but prices are depressed for wood products manufacturing facilities, especially those without a dependable raw material supply. Total closure and liquidation of assets then becomes the logical next course of action.

The consequences of losing primary processing infrastructure, such as sawmills and manufacturers that use processing residuals, are evident in states such as Colorado, New Mexico, Arizona and Utah. In these regions, the forest industry infrastructure largely disappeared by the mid- to late-1990s, and as a result it became very difficult to conduct ecosystem restoration and fuels reduction projects of any scale unless heavily subsidized. In response, significant public funds have been expended over the last 15 years to recreate the primary processing infrastructure that previously existed to help manage public and private forest lands, but this remains an ongoing challenge. Some critics suggest that the lack of funding is the primary reason that progress has been so slow. Others note that private capital tends to follow sustainable and consistent supply. Although longer-term contracts have begun to be issued by the Forest Service, indications are that it will take more time to build an experienced workforce, and for business owners to gain sufficient experience and financial stability to begin to make a significant impact on the backlog of ecosystem restoration and fuels reduction needs of the region.

Based on the results of this update, a scenario similar to what has been observed in Colorado, New Mexico, Arizona, and Utah could unfold sooner rather than later in some areas of Eastern Oregon, i.e. once processing capacity is lost, the ability to achieve broader forest ecosystem management objectives becomes much more uncertain.

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Map 1. – Major Commercial Users of Eastern Oregon Logs and Fiber

# MAJOR COMMERCIAL USERS OF EASTERN OREGON LOGS AND FIBER

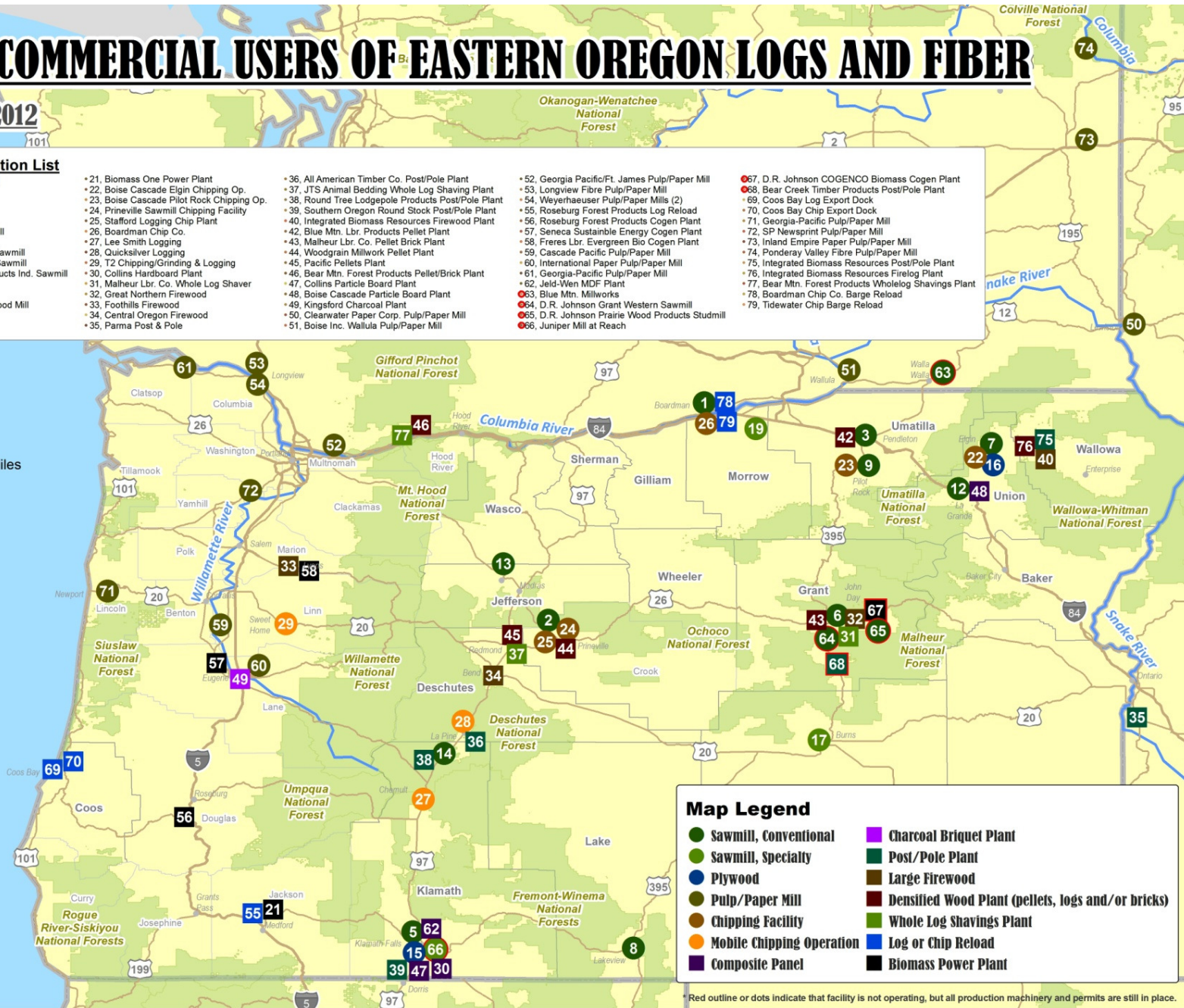
SEPTEMBER, 2012

## Facility and Operation List

- |  |   |   |   |  |
|--|---|---|---|--|
| <ul style="list-style-type: none"> <li>• 1, Boardman Chip Co. Sawmill</li> <li>• 2, Prineville Sawmill</li> <li>• 3, Blue Mtn. Lbr. Products</li> <li>• 5, Jeld-Wen Thomas Lbr.</li> <li>• 6, Malheur Lbr. Co.</li> <li>• 7, Boise Cascade Elgin Sawmill</li> <li>• 8, Collins Fremont Sawmill</li> <li>• 9, Boise Cascade Pilot Rock Sawmill</li> <li>• 12, Boise Cascade Mt. Emily Sawmill</li> <li>• 13, Warm Springs Forest Products Ind. Sawmill</li> <li>• 14, Interfor Pacific Sawmill</li> <li>• 15, Columbia Plywood</li> <li>• 16, Boise Cascade Elgin Plywood Mill</li> <li>• 17, Joseph Juniper</li> <li>• 19, Upper Columbia Sawmill</li> </ul> | <ul style="list-style-type: none"> <li>• 21, Biomass One Power Plant</li> <li>• 22, Boise Cascade Elgin Chipping Op.</li> <li>• 23, Boise Cascade Pilot Rock Chipping Op.</li> <li>• 24, Prineville Sawmill Chipping Facility</li> <li>• 25, Stafford Logging Chip Plant</li> <li>• 26, Boardman Chip Co.</li> <li>• 27, Lee Smith Logging</li> <li>• 28, Quicksilver Logging</li> <li>• 29, T2 Chipping/Grinding &amp; Logging</li> <li>• 30, Collins Hardboard Plant</li> <li>• 31, Malheur Lbr. Co. Whole Log Shaver</li> <li>• 32, Great Northern Firewood</li> <li>• 33, Foothills Firewood</li> <li>• 34, Central Oregon Firewood</li> <li>• 35, Parma Post &amp; Pole</li> </ul> | <ul style="list-style-type: none"> <li>• 36, All American Timber Co. Post/Pole Plant</li> <li>• 37, JTS Animal Bedding Whole Log Shaving Plant</li> <li>• 38, Round Tree Lodgepole Products Post/Pole Plant</li> <li>• 39, Southern Oregon Round Stock Post/Pole Plant</li> <li>• 40, Integrated Biomass Resources Firewood Plant</li> <li>• 42, Blue Mtn. Lbr. Products Pellet Plant</li> <li>• 43, Malheur Lbr. Co. Pellet Brick Plant</li> <li>• 44, Woodgrain Millwork Pellet Plant</li> <li>• 45, Pacific Pellets Plant</li> <li>• 46, Bear Mtn. Forest Products Pellet/Brick Plant</li> <li>• 47, Collins Particle Board Plant</li> <li>• 48, Boise Cascade Particle Board Plant</li> <li>• 49, Kingsford Charcoal Plant</li> <li>• 50, Clearwater Paper Corp. Pulp/Paper Mill</li> <li>• 51, Boise Inc. Wallula Pulp/Paper Mill</li> </ul> | <ul style="list-style-type: none"> <li>• 52, Georgia Pacific/Ft. James Pulp/Paper Mill</li> <li>• 53, Longview Fibre Pulp/Paper Mill</li> <li>• 54, Weyerhaeuser Pulp/Paper Mills (2)</li> <li>• 55, Roseburg Forest Products Log Reload</li> <li>• 56, Roseburg Forest Products Cogen Plant</li> <li>• 57, Seneca Sustainable Energy Cogen Plant</li> <li>• 58, Freres Lbr. Evergreen Bio Cogen Plant</li> <li>• 59, Cascade Pacific Pulp/Paper Mill</li> <li>• 60, International Paper Pulp/Paper Mill</li> <li>• 61, Georgia-Pacific Pulp/Paper Mill</li> <li>• 62, Jeld-Wen MDF Plant</li> <li>• 63, Blue Mtn. Millworks</li> <li>• 64, D.R. Johnson Grant Western Sawmill</li> <li>• 65, D.R. Johnson Prairie Wood Products Studmill</li> <li>• 66, Juniper Mill at Reach</li> </ul> | <ul style="list-style-type: none"> <li>• 67, D.R. Johnson COGENCO Biomass Cogen Plant</li> <li>• 68, Bear Creek Timber Products Post/Pole Plant</li> <li>• 69, Coos Bay Log Export Dock</li> <li>• 70, Coos Bay Chip Export Dock</li> <li>• 71, Georgia-Pacific Pulp/Paper Mill</li> <li>• 72, SP Newsprint Pulp/Paper Mill</li> <li>• 73, Inland Empire Paper Pulp/Paper Mill</li> <li>• 74, Ponderay Valley Fibre Pulp/Paper Mill</li> <li>• 75, Integrated Biomass Resources Post/Pole Plant</li> <li>• 76, Integrated Biomass Resources Firelog Plant</li> <li>• 77, Bear Mtn. Forest Products Wholelog Shavings Plant</li> <li>• 78, Boardman Chip Co. Barge Reload</li> <li>• 79, Tidewater Chip Barge Reload</li> </ul> |
|--|---|---|---|--|



0 12.5 25 50 Miles



### Map Legend

● Sawmill, Conventional	■ Charcoal Briquet Plant
● Sawmill, Specialty	■ Post/Pole Plant
● Plywood	■ Large Firewood
● Pulp/Paper Mill	■ Densified Wood Plant (pellets, logs and/or bricks)
● Chipping Facility	■ Whole Log Shavings Plant
● Mobile Chipping Operation	■ Log or Chip Reload
● Composite Panel	■ Biomass Power Plant

Red outline or dots indicate that facility is not operating, but all production machinery and permits are still in place.

For more information regarding this map, please contact Larry Swan at lswan01@fs.fed.us Last update: 05/09/2013

# **APPENDICES**

## **Eastern Oregon Primary Wood Products Processing Facilities and Operations Update September, 2012**

<b>Appendix A</b>	Interview Questions
<b>Appendix B</b>	Map Number List, Eastern Oregon Primary Wood Products Facilities and Operations Map 1, Major Commercial Users of Eastern Logs and Fiber
<b>Appendix C</b>	Direct Eastern Oregon Primary Wood Products Processing Employment by County and Facility
<b>Appendix D</b>	Current Raw Material Consumption and Projected Supply Needed at Full Capacity, By Industry Subsector
<b>Appendix E</b>	Current Annual Raw Material Consumption vs. Estimated Supply Needed at Full Capacity, By Individual Facilities and Operations
<b>Appendix F</b>	Whole Log Users, Preferred Economic Log Diameters and Species
<b>Appendix G</b>	Estimated Current Percent and Quantity Non-Federal and Federal Supply

## **APPENDIX A**

### **Interview Questions**

**Eastern Oregon Primary Wood Products Processing Facilities and Operations Update**

September, 2012



# **APPENDIX A**

## **Interview Questions**

### **Eastern Oregon Primary Wood Products Processing Facilities and Operations Update**

September, 2012

#### **1) Current Log Consumption**

- How much in log scale (or whatever unit is commonly used) does the facility or operation currently utilize on an annualized basis?
- What species?
- How much from Federal sources?
- How has this changed over the last 10 years?
- How much in log scale (or whatever unit is commonly used) would the facility or operation require if operated at “full capacity” (two shifts or whatever is considered “full capacity” for this particular facility or operation)?

#### **2) Production**

- What is the production capacity of this facility or operation at “full capacity”?
- What percent capacity is the facility or operation currently operating?

#### **3) Employees**

- How many employees do current have at the facility or operation?
- How many more employees would you add if you were to operate at full capacity?

**APPENDIX B**

**Map Number List, Eastern Oregon Primary Wood Products  
Facilities and Operations**

**and**

**Map 1**

**Major Commercial Users of Eastern Oregon Logs and Fiber**

Eastern Oregon Primary Wood Products Processing Facilities and Operations Update

September, 2012

**APPENDIX B - Map Number List**  
**Major Eastern Oregon Wood Products Primary Processing Facilities and Operations**

<b>Facility or Operation Category</b>	<b>Map No.</b>	<b>Facility Name, City</b>	<b>Type of Facility</b>	<b>Current Annual Raw Material Consumed</b>	<b>Current Number of Employees</b>
<p><b>NOTE: Log home manufacturers were not included. Mobile chippers/grinders were included only if they shipped more than 35,000 bdt/yr. Firewood processors were included only if the business shipped more than 1,000 cords/yr. Log consumption is shown in Scribner log scale (Eastside), green tons (gt) or bone dry tons (bdt), depending on customary practices of a particular industry sub-sector. Facilities may be listed more than once depending on additional on-site processing capacities identified by owners. "X" is used for some map numbers to designate facilities that are temporarily closed or closed, but still have equipment and machinery in place. Aggregate totals may not be accurate because certain raw material consumption numbers may be duplicated in other operations, such as stationary and mobile chippers. When data ranges were provided, statistical midpoint was used to estimate current raw material consumption, employment, and capacity percentage. Pulp/paper chip consumption was estimated using production data from Ehinger and Associates (2012). Biomass thermal raw material consumption, e.g. for lumber and veneer drying, was not included in Biomass Energy category unless a facility consistently purchases outside raw material for this purpose. Hog fuel consumption for boilers at pulp/paper mills was not split-out from total estimated raw material use. Employment data for pulp/paper mills came from Ehinger &amp; Associates (2012).</b></p>					
<b>Sawmills, Small</b> (1.5 MMBF - 25 MMBF/yr, Log Consumption, Full Capacity )	1	Boardman Chip Co., Sawmill	Stud Mill (chip mill and barge reload listed separately)	5.5 MMBF	4
	2	Prineville Sawmill, Prineville	Pine Sawmill (chipping facility listed separately)	2.6 MMBF	12
	3	Dodge Logging, Blue Mtn. Lbr. Products, Reith	Sawmill, Random Length Dimension, Large and Small Sides (pellet mill listed separately)	12 to15 MMBF	90 (includes company logging crews)
	X63	Dodge Logging, Blue Mtn. Millworks, Walla Walla, WA	Sawmill, Specialty, Long Lengths, Timbers and Beams	0	0
<b>Sawmills, Medium</b> (26 MMBF - 65 MMB, Log Consumption, Full Capacity)	5	Jeld-Wen Thomas Lbr., Klamath Falls	Sawmill	Est. 28 MMBF	Est. 56
	6	Malheur Lbr. Co., John Day	Sawmill (see whole log shaver and pellet/biobrick plants listed separately)	27 MMBF	76
	7	Boise Cascade Elgin Sawmill, Elgin	Stud Mill. Large and Small Sides (chipping operation listed separately)	36 MMBF	114
	8	Collins Fremont Sawmill, Lakeview	Sawmill, Large and Small Sides	40 MMBF	75
	9	Boise Cascade Pilot Rock (aka Kinzua), Pilot Rock	Sawmill, Large and Small Sides (chipping operation listed separately)	44 MMBF (large side only)	84
	X64	D.R. Johnson, Grant Western, John Day	Sawmill, Large and Small Sides	0	0
	X65	D.R. Johnson, Prairie Wood Products, Prairie City	Stud Sawmill	0	0
<b>Sawmills, Large</b> (66+ MMB, Log Consumption, Full Capacity)	12	Boise Cascade Mt. Emily Sawmill, La Grande	Sawmill, Small Side (also has Large Side, but not currently used)	12 MMBF	32
	13	Warm Springs Forest Products Industries, Warm Springs	Sawmill, Large and Small Sides	46 MMBF	129

**APPENDIX B - Map Number List**  
**Major Eastern Oregon Wood Products Primary Processing Facilities and Operations**

<b>Facility or Operation Category</b>	<b>Map No.</b>	<b>Facility Name, City</b>	<b>Type of Facility</b>	<b>Current Annual Raw Material Consumed</b>	<b>Current Number of Employees</b>
	14	Interfor Pacific, Gilchrist	Sawmill, Large and Small Sides	75 MMBF	135
	<b>Subtotal</b>			<b>329.6 MMBF</b>	<b>807</b>
<b>Plywood Plants</b>	15	Columbia Plywood, Klamath Falls	Specialty Hardwood Plywood Plant	22 MMBF	215
	16	Boise Cascade Elgin Plywood Mill, Elgin	Plywood	71 MMBF	200
	<b>Subtotal</b>			<b>93 MMBF</b>	<b>415 MMBF</b>
<b>Specialty Sawmills</b>	17	Joseph Juniper, Burns	Specialty Juniper Sawmill (2 portable mills)	Approx. 1,200 gt	8
	X66	Juniper Mill at Reach, Klamath Falls	Specialty Juniper Sawmill, Two Sides (circle saw and scragg mill)	0	0
	19	Upper Columbia Sawmill	Specialty Hybrid Poplar Sawmill	426,000 gt	80 to 85
	<b>Subtotal</b>			<b>427,200 gt</b>	<b>88 to 93</b>
<b>Biomass Energy</b>	X67	D. R. Johnson, COGENCO, Prairie City	Cogen. Biomass Power Plant (9.4 MW gross)	0	0
	<b>Subtotal</b>			0	0
<b>Chipping, Stationary</b>	22	Boise Cascade, Elgin Sawmill, Elgin	Chipping Operation	10,000 to 20,000 bdt pulp log equivalent	6
	23	Boise Cascade, Pilot Rock Sawmill, Pilot Rock	Chipping Operation	10,000 to 15,000 bdt pulp log equivalent	6
	24	Prineville Sawmill, Chipping Facility, Prineville	Specialty Pine Sawmill and Chipping Facility	0	0
	25	WeyCo Chip Plant, Prineville	Chipping Facility	56,000 bdt pulp log equivalent	3 to 5
	26, 78	Boardman Chip Co., Boardman	Chip Plant (Barge Reload, and Small Log Sawmill listed separately, but volumes for reload are included here)	60,000 to 80,000 bdt pulp log equivalent	9 to 10
	<b>Subtotal</b>			<b>153,500 bdt</b>	<b>24 to 27</b>
<b>Chipping, Mobile</b>	27	Lee Smith Logging, Chemult	Mobile Chipping	40,000 bdt	12
	28	Quicksilver, La Pine	Mobile Chipping and Grinding	50,000 to 60,000 bdt pulp logs + 6-7 MMBF sawlogs	35
	29	T2, Inc., Sweet Home	Mobile Chipping and Grinding	118,400 bdt pulp logs + 2.0-3.0 MMBF sawlogs	35 + 20 subs
	<b>Subtotal</b>			<b>213,400 + 9.0 MMBF sawlogs</b>	<b>102</b>
<b>Hardboard</b>	30	Collins Hardboard, Klamath Falls	Hardboard Plant	60,000 bdt (≤ 6% bark)	116
	<b>Subtotal</b>			<b>60,000 bdt</b>	<b>116</b>

**APPENDIX B - Map Number List**  
**Major Eastern Oregon Wood Products Primary Processing Facilities and Operations**

<b>Facility or Operation Category</b>	<b>Map No.</b>	<b>Facility Name, City</b>	<b>Type of Facility</b>	<b>Current Annual Raw Material Consumed</b>	<b>Current Number of Employees</b>
<b>Other Whole Log Users, Including Post/Pole Plants, Whole Log Shavers, and Large Firewood Processors</b>	31	Malheur Lbr. Co., John Day	Whole Log Shaver	740 gt	0
	32	Great Northern, John Day	Firewood	2,600 gt	2
	34	Central Oregon Firewood, Bend	Firewood	Est. 4,400 gt	Est. 7
	36	All American Timber Co., La Pine	Post/Pole	Est. 4,375 to 6,250 gt	4 to 6
	37	JTS Animal Bedding, Redmond	Whole Log Shavers and Baling Plant	3,125 gt for whole log shavers	12
	38	Round Tree Lodgepole Products, Crescent	Post/Pole	Est. 6,250 gt	4 to 5
	39	Southern Oregon Round Stock, Worden	Post/Pole Plant	12,500 gt	6
	40, 75, 76	Integrated Biomass Resources, Wallowa	Firewood, Posts/Poles and Densified Fire Logs	10,000 gt	15
	X68	Bear Creek Timber Products, Seneca	Post/Pole	0	0
		<b>Subtotal</b>	<b>44,928 gt</b>	<b>79 to 82</b>	
<b>Processing Residuals Users, Non-Pulp/Paper, Including Particle Board, and Pellet and Other Densified Wood Product Manufs.</b>	42	Blue Mtn. Lbr. Products, Reith	Pellet Plant	28,000 gt	4
	43	Malheur Lbr. Co., John Day	Pellet and BioBrick Plant	17,000 gt	4
	44	Woodgrain Millwork, Prineville	Pellet Plant	Est. 15,000 to 20,000 gt	7
	45	Pacific Pellets, Redmond	Pellet Plant	28,000 gt (DF residuals)	10 to 14
	47	Collins Particle Board, Klamath Falls	Particle Board Plant (assume 35% MC)	84,000 bdt (est. 113,400 gt equivalent)	72
	48	Boise Cascade Particle Board Plant, Island City	Particle Board Plant (assume 35% MC)	135,000 bdt (est. 182,250 gt equivalent)	95
	62	Jeld-Wen MDF, Klamath Falls	MDF Plant (assume 35% MC)	Est. 28,000 bdt (est. 37,800 gt equivalent)	Est. 50
<b>Chip Barge Reloads</b>	78	Boardman Chip Co. Barge Reload	Chip Barge Reload	See Boardman Chip Co. (Map No. 26)	N/A
	79	Tidewater Chip Barge Reload	Chip Barge Reload	Unknown	Est. 4
		<b>Subtotal</b>	<b>423,950 gt</b>	<b>248</b>	
<b>Other Facilities Using Eastern Oregon Logs or Fiber</b>					
<b>Charcoal Briquette</b>	49	Kingsford Charcoal, Springfield	Charcoal Briquet Plant	100,000 to 120,000 bdt (20,000 to 24,000 bdt sourced from E. OR)	91
		<b>Subtotal</b>	<b>115,000 bdt</b>	<b>91</b>	

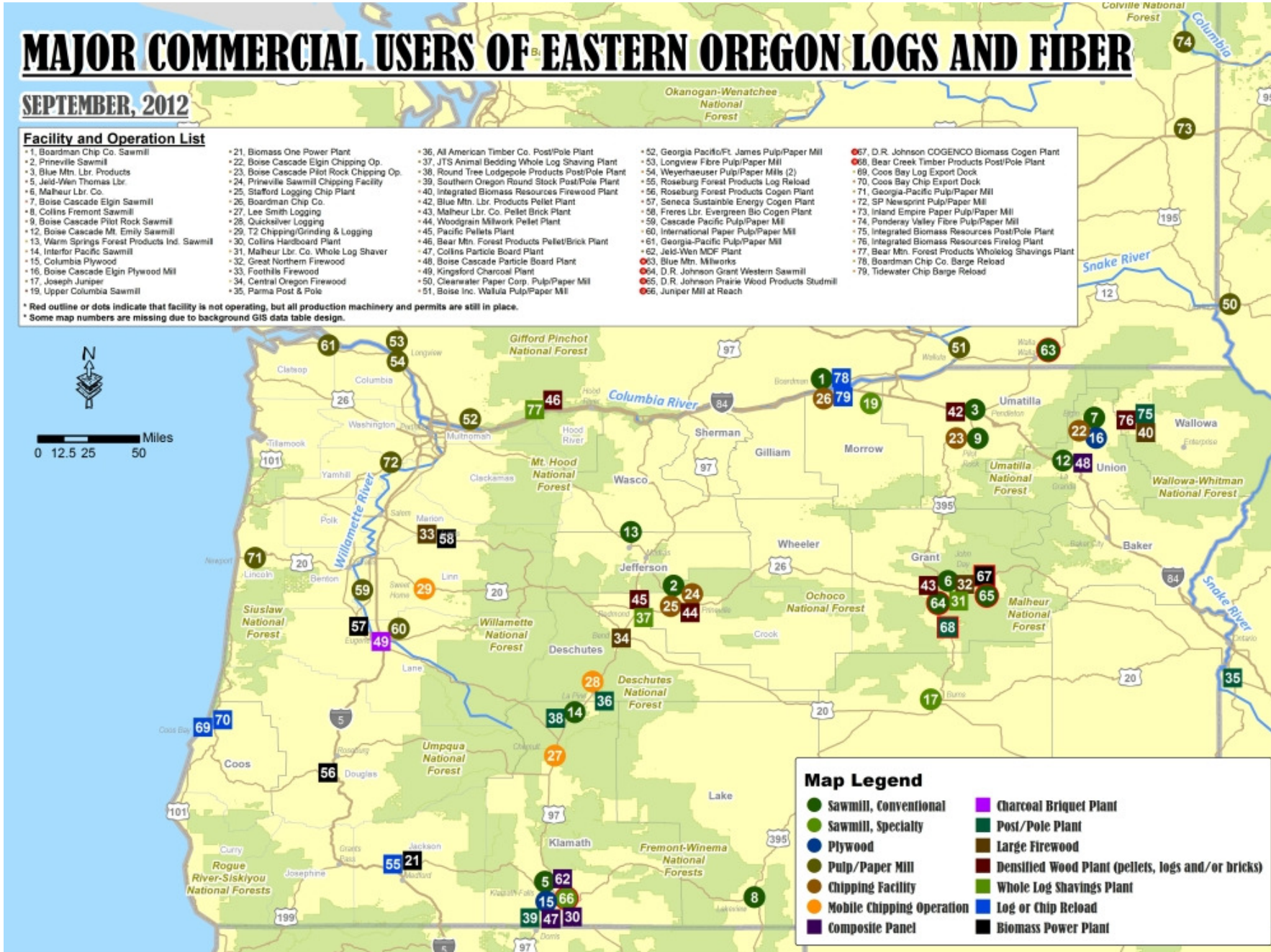
**APPENDIX B - Map Number List**  
**Major Eastern Oregon Wood Products Primary Processing Facilities and Operations**

<b>Facility or Operation Category</b>	<b>Map No.</b>	<b>Facility Name, City</b>	<b>Type of Facility</b>	<b>Current Annual Raw Material Consumed</b>	<b>Current Number of Employees</b>
<b>Biomass Energy</b>	21	Biomass One, White City	Biomass Power Plant (35 MW gross)	160,000 bdt (66% capacity) (est. 10,000 to 20,000 bdt from E. OR)	58
	56	Roseburg Forest Products, Dillard	Cogen. Biomass Power Plant (40 MW gross)	?	?
	57	Seneca Sustainable Energy, Eugene	Cogen. Biomass Power Plant (20 MW gross)	?	?
	58	Freres Lbr., Evergreen Bio Power, Lyons	Cogen. Biomass Power Plant (10 MW gross)	?	?
		<b>Subtotal</b>	<b>160,000+ bdt</b>	<b>58+</b>	
<b>Other Whole Log Users</b>	33	Foothills Firewood, Lyons	Firewood	Est. 3,300 gt	14
	35	Parma Post & Pole, Parma, ID	Post/Pole Plant and Treatment Facility	3,750 gt (represents obtaining 30% of supply from E. Oregon)	15
	55	Roseburg Forest Products Log Reload, White City	Log Reload Facility	?	?
	69, 70	Coos Bay Chip and Log Export Facilities	Log and Chip Export Facilities	?	?
		<b>Subtotal</b>	<b>7050 gt</b>	<b>29</b>	
<b>Processing Residuals Users, Non-Pulp/Paper</b>	46	Bear Mtn. Forest Products, Cascade Locks	Pellet and BioBrick Plants, and Whole Log Shaver	50,000 to 55,000 gt (mostly DF). No estimate for whole log shaver.	Est. 20 to 30
		<b>Subtotal</b>	<b>52,500 gt</b>	<b>25</b>	
<b>Pulp/Paper</b>	61	Georgia-Pacific, Wauna	Pulp/Paper Mill	Est. 630,000 bdt	800
	60	International Paper, Springfield	Pulp/Paper	Est. 357,000 bdt	?
	71	Georgia-Pacific, Toledo	Pulp/Paper	Est. 765,000 bdt	490
	59	Cascade Pacific Pulp, Halsey	Pulp/Paper	Est. 263,000 bdt	180
	72	SP Newsprint, Newburg	Pulp/Paper	Est. 561,000 bdt	175
	50	Clearwater Paper Corp., Lewiston, ID	Pulp/Paper	Est. 684,000 bdt	115
	51	Boise Inc., Wallula, WA	Pulp/Paper	612,000 bdt (245,000 bdt from E. OR)	440
	73	Inland Empire Paper, Spokane, WA	Pulp/Paper	Est. 300,000 bdt	125

**APPENDIX B - Map Number List**  
**Major Eastern Oregon Wood Products Primary Processing Facilities and Operations**

<b>Facility or Operation Category</b>	<b>Map No.</b>	<b>Facility Name, City</b>	<b>Type of Facility</b>	<b>Current Annual Raw Material Consumed</b>	<b>Current Number of Employees</b>
	52	Georgia Pacific/Ft. James, Camas, WA	Pulp/Paper	Est. 740,000 bdt	524
	74	Ponderay Valley Fibre, Osk, WA	Pulp/Paper	Est. 357,000 bdt	200
	53	Longview Fiber, Longview, WA	Pulp/Paper	Est. 1,428,000 bdt	1800
	54	Weyerhaeuser, Longview, WA	Pulp/Paper (2)	Est. 918,000 bdt	1250
		<b>Subtotal</b>		Est. 7.6 million bdt	>6099

**Map 1. – Major Commercial Users of Eastern Oregon Logs and Fiber**





**APPENDIX C**

**Direct Eastern Oregon Primary Wood Products Processing Employment by  
County and Facility**

Eastern Oregon Primary Wood Products Processing Facilities and Operations Update

September, 2012

**APPENDIX C - Direct Eastern Oregon Primary Wood Products Processing Employment by County and Facility  
Eastern Oregon Primary Wood Products Processing Facilities and Operations Update  
September, 2012**

<b>County</b>	<b>Facility Name, City</b>	<b>Type of Facility</b>	<b>Current Number of Employees</b>	<b>Additional Employees at Full Capacity</b>	<b>Current Total Potential Employees</b>
<b>NOTE:</b> Full capacity was defined by each business, usually assuming 2 shifts and adequate fiber supply or log supply that would meet mill volume, species and diameter specifications. Log home manufacturers were not included. Mobile chippers/grinders were included only if they shipped more than 35,000 bdt/yr. Firewood processors were included only if the business shipped more than 1,000 cords/yr. Facilities may be listed more than once depending on additional on-site processing capacities identified by owners. Midpoint used when employment numbers were provided as a range. Unless otherwise noted, employment data were not compiled or estimated for Western Oregon and out-of-state facilities or operations that utilize Eastern Oregon logs or fiber.					
<b>Baker</b>	None		0	0	0
	<b>Baker County Subtotal</b>		<b>0</b>	<b>0</b>	<b>0</b>
<b>Crook</b>	<b>Prineville Sawmill, Prineville</b>	Pine Sawmill and Chipping Facility	12	12	24
	<b>Woodgrain Millwork, Prineville</b>	Pellet Plant	7	3	10
	<b>WeyCo Chip Plant, Prineville</b>	Chipping Facility	4	0	4
	<b>Crook County Subtotal</b>		<b>23</b>	<b>15</b>	<b>38</b>
<b>Deschutes</b>	<b>All American Timber Co., La Pine</b>	Post/Pole	5	5	10
	<b>Central Oregon Firewood, Bend</b>	Firewood	7	3	10
	<b>JTS Animal Bedding, Redmond</b>	Whole Log Shavers and Baling Plant	12	20	32
	<b>Pacific Pellets, Redmond</b>	Pellet Plant	12	8	20
	<b>Quicksilver, La Pine</b>	Mobile Chipping and Grinding	35	20	55
	<b>Round Tree Lodgepole Products, Crescent</b>	Post/Pole	5	3	8
	<b>Deschutes County Subtotal</b>		<b>76</b>	<b>59</b>	<b>135</b>
<b>Gilliam</b>	None		0	0	0
	<b>Gilliam County Subtotal</b>		<b>0</b>	<b>0</b>	<b>0</b>
<b>Grant</b>	<b>Bear Creek Timber Products, Seneca</b>	Post/Pole	0	8	8
	<b>D. R. Johnson, COGENCO, Prairie City</b>	Cogen. (CHP) Biomass Power Plant (9.4 MW gross)	0	15	15
	<b>D.R. Johnson, Grant Western (D.R. Johnson Family)</b>	Sawmill, Large and Small Sides	0	90	90
	<b>Great Northern, John Day</b>	Firewood	2	2	4
	<b>Malheur Lbr. Co., John Day</b>	Sawmill, Whole Log Shaver, and Pellet and BioBrick Plant	80	35	115
	<b>D.R. Johnson, Prairie Wood Products, Prairie City</b>	Sawmill (Stud Mill, mainly 2X4 and 2X6, 8' and 9')	0	85	85
	<b>Grant County Subtotal</b>		<b>82</b>	<b>235</b>	<b>317</b>
<b>Harney</b>	<b>Joseph Juniper, Burns</b>	Specialty Juniper Sawmill (2 portable mills)	8	5	13
	<b>Harney County Subtotal</b>		<b>8</b>	<b>5</b>	<b>13</b>
<b>Jefferson</b>	<b>Warm Springs Forest Products Industries, Warm Springs</b>	Sawmill, Large and Small Sides	129	61	190
	<b>Jefferson County Subtotal</b>		<b>129</b>	<b>61</b>	<b>190</b>

**APPENDIX C - Direct Eastern Oregon Primary Wood Products Processing Employment by County and Facility  
Eastern Oregon Primary Wood Products Processing Facilities and Operations Update  
September, 2012**

<b>County</b>	<b>Facility Name, City</b>	<b>Type of Facility</b>	<b>Current Number of Employees</b>	<b>Additional Employees at Full Capacity</b>	<b>Current Total Potential Employees</b>
<b>Klamath</b>	Collins Hardboard, Klamath Falls	Hardboard Plant	116	76	192
	Collins Particle Board, Klamath Falls	Particle Board Plant	72	62	134
	Columbia Plywood, Klamath Falls	Specialty Hardwood Plywood Plant	215	0	215
	Interfor Pacific, Gilchrist	Sawmill, Large and Small Sides	135	Unknown	135
	Juniper Mill at Reach, Klamath Falls	Sawmill, Two Sides (circle saw and scragg mill)	0	12	12
	Southern Oregon Round Stock, Worden	Post/Pole Plant	8	5	13
	Jeld-Wen Thomas Lbr., Klamath Falls	Sawmill, Pine	56	0	56
	<b>Klamath County Subtotal</b>			<b>602</b>	<b>155</b>
<b>Lake</b>	Collins Fremont Sawmill, Lakeview	Sawmill, Large and Small Sides	75	24	99
	<b>Lake County Subtotal</b>			<b>75</b>	<b>24</b>
<b>Malheur</b>	None		0	0	0
	<b>Malheur County Subtotal</b>			<b>0</b>	<b>0</b>
<b>Morrow</b>	Boardman Chip Co., Boardman (Richard Dodge)	Chip Plant, Chip Barge Reload, and Small Log Sawmill	10	5	15
	Upper Columbia Sawmill	Specialty Hybrid Poplar Sawmill	83	83	166
	Tidewater	Chip Barge Reload	Est. 4	Unknown	Unknown
	<b>Morrow County Subtotal</b>			<b>97</b>	<b>88</b>
<b>Sherman</b>	None		0	0	0
	<b>Sherman County Subtotal</b>			<b>0</b>	<b>0</b>
<b>Umatilla</b>	Boise Cascade Pilot Rock (aka Kinzua), Pilot Rock	Sawmill, Large and Small Sides	90	40	130
	Dodge Logging, Blue Mtn. Lbr. Products, Reith	Sawmill, Random Length Dimension, Large and Small Sides, and Pellet Plant	90	4	94
	<b>Umatilla County Subtotal</b>			<b>180</b>	<b>44</b>
<b>Union</b>	Boise Cascade Elgin Plywood Mill, Elgin	Plywood	200	0	200
	Boise Cascade Elgin Sawmill, Elgin	Stud Mill. Large and Small Sides	120	58	178
	Boise Cascade Particle Board Plant, Island City	Particle Board Plant	95	65	160
	Boise Cascade Mt. Emily Sawmill, La Grande	Sawmill, Small Side (also has Large Side, but not currently used)	32	122	154
	<b>Union County Subtotal</b>			<b>447</b>	<b>245</b>
<b>Wallowa</b>	Integrated Biomass Resources, Wallowa	Firewood, Posts/Poles, and Compressed Fire Logs	15	30	45
	<b>Wallowa County Subtotal</b>			<b>15</b>	<b>30</b>
<b>Wasco</b>	None		0	0	0
<b>Wasco County Subtotal</b>			<b>0</b>	<b>0</b>	<b>0</b>
<b>Wheeler</b>	None		0	0	0
	<b>Wheeler County Subtotal</b>			<b>0</b>	<b>0</b>

**APPENDIX C - Direct Eastern Oregon Primary Wood Products Processing Employment by County and Facility  
Eastern Oregon Primary Wood Products Processing Facilities and Operations Update  
September, 2012**

<b>County</b>	<b>Facility Name, City</b>	<b>Type of Facility</b>	<b>Current Number of Employees</b>	<b>Additional Employees at Full Capacity</b>	<b>Current Total Potential Employees</b>
<b>ESTIMATED TOTAL EASTERN OREGON</b>			<b>1730</b>	<b>961</b>	<b>2691</b>
<b>Western Oregon</b>					
Clatsop	Georgia-Pacific, Wauna	Pulp/Paper Mill	?	?	?
Douglas	Roseburg Forest Products, Dillard	Cogen. (CHP) Biomass Power Plant (40 MW gross)	?	?	?
Hood River	Bear Mtn. Forest Products, Cascade Locks	Pellet and BioBrick Plants, and Whole Log Shaver	Est. 20 to 30	Est. 10-20	40
Jackson	Biomass One, White City	Biomass Power Plant	58 (includes company truckers, mechanics, millwrights and support staff)	0	?
	Roseburg Forest Products, White City	Log Reload	?	?	?
Lane	Kingsford Charcoal	Charcoal Briquette Plant	?	?	?
	International Paper, Springfield	Pulp/Paper	?	?	?
	Seneca Sustainable Energy	Cogen. (CHP) Biomass Power Plant (20 MW gross)	?	?	?
Lincoln	Georgia-Pacific, Toledo	Pulp/Paper	?	?	?
Linn	Cascade Pacific Pulp, Halsey	Pulp/Paper	?	?	?
	Foothills Firewood, Lyons	Firewood	14	5	19
	T2, Inc., Sweet Home	Mobile Chipping and Grinding (employment includes subcontractors)	55	40	90
Marion	Freres Lbr. Evergreen Bio Power, Lyons	Cogen. (CHP) Biomass Power Plant (10 MW gross)	?	?	?
Yamhill	SP Newspring, Newburg	Pulp/Paper	?	?	?
	<b>TOTAL (not estimated due to lack of data)</b>			<b>?</b>	<b>?</b>
<b>Out-of-State</b>					
Idaho	Parma Post & Pole, Parma, ID	Post/Pole Plant and Treatment Facility	15	0	15
	Clearwater Paper Corp., Lewiston, ID	Pulp/Paper	?	?	?
Washington	Blue Mtn. Millworks, Walla Walla, WA	Sawmill, Specialty, Long-Length Timbers and Beams	0	8	8
	Boise Wallula, Wallula, WA	Pulp/Paper	?	?	?
	Inland Empire Paper, Spokane	Pulp/Paper	?	?	?
	Georgia Pacific/Ft. James, Camas, WA	Pulp/Paper	?	?	?
	Ponderay Fiber, Osk	Pulp/Paper	?	?	?
	Longview Fiber, Longview, WA	Pulp/Paper	?	?	?
	Weyerhaeuser, Longview, WA	Pulp/Paper (2)	?	?	?
<b>TOTAL (not estimated due to lack of data)</b>			<b>?</b>	<b>?</b>	<b>?</b>

**APPENDIX D**

**Current Raw Material Consumption and Projected Supply Needed at Full Capacity, By  
Industry Subsector**

Eastern Oregon Primary Wood Products Processing Facilities and Operations Update

September, 2012

**APPENDIX D - Current Raw Material Consumption and Projected Supply Needed at Full Capacity By Industry Subsector**

Eastern Oregon Primary Wood Products Processing Facilities and Operations Update  
September, 2012

<b>Geographic Location</b>	<b>Wood Products Subsector</b>	<b>Current Annual Raw Material Supply Consumed</b>	<b>Current Raw Material Supply to Green Tons (gt)</b>	<b>Projected Annual Raw Material Consumption, Full Capacity</b>	<b>Full Capacity Raw Material Supply to Green Tons (gt)</b>
<p><b>NOTE:</b> Full capacity was defined by each business, usually assuming 2 shifts and adequate fiber or log supply to meet mill volume, species and diameter specifications. If the business was unable to be contacted, estimates were made using similar types and sizes of businesses. Log home manufacturers were not included. Mobile chippers/grinders were included only if they shipped more than 35,000 bdt/yr. Firewood processors were included only if the business shipped more than 1,000 cords/yr. Specialty sawmill category includes the large hybrid poplar mill near Boardman and some juniper mills. Log consumption is shown in Scribner log scale (Eastside), green tons (gt) or bone dry tons (bdt), depending on customary practices of a particular industry sub-sector. Converted MBF log scale to gt @6.5 gt/MBF. Converted bdt stationary and mobile chipping output, and hardboard consumption to gt @ 40% moisture content (MC) and 35% MC for non-pulp paper processing residuals. Pulp/paper chip consumption was estimated using production data from Ehinger and Associates (2007). Biomass thermal raw material consumption, e.g. for lumber and veneer drying, was not included in Biomass Energy category unless facility consistently purchases outside raw material for this purpose. Hog fuel consumption for boilers at pulp/paper mills was not split-out from total estimated raw material use.</p>					
<b>Eastern Oregon</b>	Sawmills (12 of 14 open)	329.6 MMBF	2,141,750	673 MMBF	4,374,500
	Plywood (2 of 2 open)	93 MMBF	604,500	93 MMBF	604,500
	Biomass Energy (1 of 1 closed)	0	0	70,000 bdt	98,000
	Chipping, Stationary Facilities (4 of 5 open)	153,500 bdt	214,900	323,500 bdt	452,900
	Chipping, Mobile (3 of 3 operating)	213,400 bdt	298,760	383,600 bdt	537,040
	Hardboard (1 of 1 open)	60,000 bdt	84,000	90,000 bdt	126,000
	Other Whole Log Users (8 of 9 open)	44,928 gt	44,928	117,250 gt	117,250
	<b>Subtotal</b>		<b>3,388,838</b>		<b>6,310,190</b>
	Specialty Sawmills (2 of 3 open)	427,200 gt	427,200	914,400 gt	914,400
	<b>Subtotal</b>		<b>427,000</b>		<b>914,400</b>
	<b>TOTAL, E. OR Whole Log Users</b>		<b>3,815,838</b>		<b>7,224,590</b>
	Processing Residuals Users, Non-Pulp Paper (6 of 6 open)	423,950 gt	423,950	793,850 gt	793,850
	<b>TOTAL, E. OR Processing Residuals Users</b>		<b>423,950</b>		<b>793,850</b>

**APPENDIX D - Current Raw Material Consumption and Projected Supply Needed at Full Capacity By Industry Subsector**

Eastern Oregon Primary Wood Products Processing Facilities and Operations Update  
September, 2012

<b>Geographic Location</b>	<b>Wood Products Subsector</b>	<b>Current Annual Raw Material Supply Consumed</b>	<b>Current Raw Material Supply to Green Tons (gt)</b>	<b>Projected Annual Raw Material Consumption, Full Capacity</b>	<b>Full Capacity Raw Material Supply to Green Tons (gt)</b>
<b>Eastern Oregon Fiber Users, Outside of Eastern Oregon</b>	Charcoal Briquette (1 of 1)	110,000 to 120,000 bdt (20,000 to 24,000 bdt from E. OR)	155,000	150,000 bdt	202,500
	Biomass Energy (4 of 4 open)	Est. min. 40,000 bdt from E. OR	56,000	Est. 60,000 bdt from E. OR	84,000
	Other Whole Log Users (4 of 4 open)	Min. 4,000 gt from E. OR	4,000	Min. 17,000 gt from E. OR	17,000
	Processing Residuals, Non-Pulp Paper (1 of 1 open)	Uses mostly DF, none from E. OR	0	Uses mostly DF, none from E. OR	0
	<b>Subtotal</b>			<b>215,000</b>	
<b>Pulp/Paper</b>	Georgia-Pacific, Wauna	Est. 630,000 bdt	1,260,000		
	International Paper, Springfield	Est. 357,000 bdt	714,000		
	Georgia-Pacific, Toledo	Est. 765,000 bdt	1,530,000		
	Cascade Pacific Pulp, Halsey	Est. 263,000 bdt	526,000		
	SP Newsprint, Newburg	Est. 561,000 bdt	1,122,000		
	Clearwater Paper Corp., Lewiston, ID	Est. 684,000 bdt	1,368,000		
	Boise Inc., Wallula, WA	612,000 bdt (245,000 bdt from E. OR)	1,224,000		
	Inland Empire Paper, Spokane, WA	Est. 300,000 bdt	600,000		
	Georgia-Pacific/St. James, Camas, WA	Est. 740,000 bdt	1,480,000		
	Ponderay Fiber, Osk, WA	Est. 357,000 bdt	714,000		
	Longview Fiber, Longview, WA	Est. 1,428,000 bdt	2,856,000		
	Weyerhaeuser (2), Longview, WA	Est. 918,000 bdt	1,836,000		
	<b>Subtotal</b>			<b>15,230,000</b>	

## **APPENDIX E**

### **Current Annual Raw Material Consumption vs. Estimated Supply Needed at Full Capacity, By Individual Facilities and Operations**

Eastern Oregon Primary Wood Products Processing Facilities and Operations Update

September, 2012



**APPENDIX E - Current Annual Raw Material Consumption vs. Estimated Supply Needed at Full Capacity, By Individual Facilities and Operations**

Eastern Oregon Primary Wood Products Processing Facilities and Operations Update  
September, 2012

<b>Facility or Operation Category</b>	<b>Map No.</b>	<b>Facility Name, City</b>	<b>Type of Facility</b>	<b>Current Annual Raw Material Consumed</b>	<b>Annual Raw Material Consumed if at Full Capacity</b>	<b>Current Percent Estimated Full Capacity Utilized</b>
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**NOTE:** Full capacity was defined by each business, usually assuming 2 shifts and adequate fiber or log supply that would meet mill volume, species and diameter specifications. If the business was unable to be contacted, estimates were made using similar types and sizes of businesses. Log home manufacturers were not included. Mobile chippers/grinders were included only if they shipped more than 35,000 bdt/yr. Firewood processors were included only if the business shipped more than 1,000 cords/yr. Log consumption is shown in Scribner log scale (Eastside), green tons (gt) or bone dry tons (bdt), depending on customary practices of a particular industry sub-sector. Facilities may be listed more than once depending on additional on-site processing capacities identified by owners. "X" is used for some map numbers to designate facilities that are temporarily closed or closed, but still have equipment and machinery in place. Aggregate totals may not be accurate because certain raw material consumption numbers may be duplicated in other operations, such as stationary and mobile chippers. When data ranges were provided, statistical midpoint was used to estimate current raw material consumption, employment, and capacity percentage. Pulp/paper chip consumption was estimated using production data from Ehinger and Associates (2007). Biomass thermal raw material consumption, e.g. for lumber and veneer drying, was not included in Biomass Energy category unless facility consistently purchases outside raw material for this purpose. Hog fuel consumption for boilers at pulp/paper mills was not split-out from total estimated raw material use. Employment data for pulp/paper mills came from Ehinger & Associates (2012).

<b>Sawmills, Small</b> (1.5 MMBF - 25 MMBF/yr, Log Consumption, Full Capacity )	1	Boardman Chip Co., Sawmill	Stud Mill (chip mill and barge reload listed separately)	5.5 MMBF	11.0 MMBF	50
	2	Prineville Sawmill, Prineville	Pine Sawmill (chipping facility listed separately)	2.6 MMBF	12 MMBF, 2 shifts	22
	3	Dodge Logging, Blue Mtn. Lbr. Products, Reith	Sawmill, Random Length Dimension, Large and Small Sides (pellet mill listed separately)	12 to15 MMBF	12 to15 MMBF	100
	X63	Dodge Logging, Blue Mtn. Millworks, Walla Walla, WA	Sawmill, Specialty, Long Lengths, Timbers and Beams	0	3 MMBF, 1 shift	0
<b>Sawmills, Medium</b> (26 MMBF - 65 MMBF, Log Consumption, Full Capacity)	5	Jeld-Wen Thomas Lbr., Klamath Falls	Sawmill	Est. 28 MMBF	Est. 28 MMBF	100
	6	Malheur Lbr. Co., John Day	Sawmill (see whole log shaver and pellet/biobrick plants listed separately)	27 MMBF	50 MMBF, 2 shifts	54
	7	Boise Cascade Elgin Sawmill, Elgin	Stud Mill. Large and Small Sides (chipping operation listed separately)	36 MMBF	52 MMBF, 2 shifts	69
	8	Collins Fremont Sawmill, Lakeview	Sawmill, Large and Small Sides	40 MMBF	55 to 60 MMBF	76
	9	Boise Cascade Pilot Rock (aka Kinzua), Pilot Rock	Sawmill, Large and Small Sides (chipping operation listed separately)	44 MMBF (large side only)	60 MMBF	73
	X64	D.R. Johnson, Grant Western, John Day	Sawmill, Large and Small Sides	0	40 MMBF, 2 shifts	0
	X65	D.R. Johnson, Prairie Wood Products, Prairie City	Stud Sawmill	0	50 MMBF, 2 shifts (25 MMBF, 1 shift)	0

**APPENDIX E - Current Annual Raw Material Consumption vs. Estimated Supply Needed at Full Capacity, By Individual Facilities and Operations**

Eastern Oregon Primary Wood Products Processing Facilities and Operations Update

September, 2012

<b>Facility or Operation Category</b>	<b>Map No.</b>	<b>Facility Name, City</b>	<b>Type of Facility</b>	<b>Current Annual Raw Material Consumed</b>	<b>Annual Raw Material Consumed if at Full Capacity</b>	<b>Current Percent Estimated Full Capacity Utilized</b>
<b>Sawmills, Large</b> (66+ MMB, Log Consumption, Full Capacity)	12	Boise Cascade Mt. Emily Sawmill, La Grande	Sawmill, Small Side (also has Large Side, but not currently used)	12 MMBF	70 MMBF, 2 shifts	17
	13	Warm Springs Forest Products Industries, Warm Springs	Sawmill, Large and Small Sides	46 MMBF	96 MMBF, 2 shifts	48
	14	Interfor Pacific, Gilchrist	Sawmill, Large and Small Sides	75 MMBF	105 MMBF	30
<b>Subtotal</b>				<b>329.6 MMBF</b>	<b>673 MMBF</b>	<b>49</b>
<b>Plywood Plants</b>	15	Columbia Plywood, Klamath Falls	Specialty Hardwood Plywood Plant	22 MMBF	22 MMBF (100% capacity, as determined by market conditions and intra-company manufacturing capacity considerations).	100
	16	Boise Cascade Elgin Plywood Mill, Elgin	Plywood	71 MMBF	71 MMBF (100% capacity)	100
	<b>Subtotal</b>				<b>93 MMBF</b>	<b>93 MMBF</b>
<b>Specialty Sawmills</b>	17	Joseph Juniper, Burns	Specialty Juniper Sawmill (2 portable mills)	Approx. 1,200 gt	Approx. 2,400 gt	50
	X66	Juniper Mill at Reach, Klamath Falls	Specialty Juniper Sawmill, Two Sides (circle saw and scragg mill)	0	48,000 to 72,000 gt	0
	19	Upper Columbia Sawmill	Specialty Hybrid Poplar Sawmill	426,000 gt	852,000 gt	50
<b>Subtotal</b>				<b>427,200 gt</b>	<b>914,400</b>	<b>47</b>
<b>Biomass Energy</b>	X67	D. R. Johnson, COGENCO, Prairie City	Cogen. Biomass Power Plant (9.4 MW gross)	0	70,000 bdt	0
<b>Subtotal</b>				<b>0</b>	<b>70,000 bdt</b>	<b>0</b>
<b>Chipping, Stationary</b>	22	Boise Cascade, Elgin Sawmill, Elgin	Chipping Operation	10,000 to 20,000 bdt pulp log equivalent	10,000 to 20,000 bdt pulp log equivalent	100
	23	Boise Cascade, Pilot Rock Sawmill, Pilot Rock	Chipping Operation	10,000 to 15,000 bdt pulp log equivalent	15,000 to 20,000 bdt pulp log equivalent	100
	24	Prineville Sawmill, Chipping Facility, Prineville	Specialty Pine Sawmill and Chipping Facility (Note: Chipping 12,000 bdt using tiops from volume already reported under Prineville Sawmill.)	0	57,600 bdt pulp log equivalent	0

**APPENDIX E - Current Annual Raw Material Consumption vs. Estimated Supply Needed at Full Capacity, By Individual Facilities and Operations**

Eastern Oregon Primary Wood Products Processing Facilities and Operations Update

September, 2012

<b>Facility or Operation Category</b>	<b>Map No.</b>	<b>Facility Name, City</b>	<b>Type of Facility</b>	<b>Current Annual Raw Material Consumed</b>	<b>Annual Raw Material Consumed if at Full Capacity</b>	<b>Current Percent Estimated Full Capacity Utilized</b>
	25	WeyCo Chip Plant, Prineville	Chipping Facility	56,000 bdt pulp log equivalent	56,000 bdt pulp log equivalent	100
	26, 78	Boardman Chip Co., Boardman	Chip Plant and Barge Reload (Small Log Sawmill Listed Separately)	60,000 to 80,000 bdt pulp log equivalent	180,000 to 200,000 bdt pulp log equivalent	37
		<b>Subtotal</b>		<b>153,500 bdt</b>	<b>323,500 bdt</b>	<b>47</b>
<b>Chipping, Mobile</b>	27	Lee Smith Logging, Chemult	Mobile Chipping	40,000 bdt	60,000 bdt	67
	28	Quicksilver, La Pine	Mobile Chipping and Grinding	50,000 to 60,000 bdt pulp logs + 6-7 MMBF sawlogs	80,000 to 100,000 bdt pulp logs + 20 MMBF sawlogs	61
	29	T2, Inc., Sweet Home	Mobile Chipping and Grinding	118,400 bdt pulp logs + 2.0-3.0 MMBF sawlogs	233,600 bdt pulp logs + 4.0-6.0 MMBF sawlogs	51
		<b>Subtotal</b>		<b>213,400 + 9.0 MMBF sawlogs</b>	<b>383,600 bdt + 25.0 MMBF sawlogs</b>	<b>56</b>
<b>Hardboard</b>	30	Collins Hardboard, Klamath Falls	Hardboard Plant	60,000 bdt (≤ 6% bark)	90,000 bdt	67
		<b>Subtotal</b>		<b>60,000 bdt</b>	<b>90,000 bdt</b>	<b>67</b>
<b>Other Whole Log Users, Including Post/Pole Plants, Whole Log Shavers, and Large Firewood Processors</b>	31	Malheur Lbr. Co., John Day	Whole Log Shaver	740 gt	1,500 to 2,000 gt	42
	32	Great Northern, John Day	Firewood	2,600 gt	3,300 to 6,600 gt	53
	34	Central Oregon Firewood, Bend	Firewood	Est. 4,400 gt	Est. 6,600 gt	67
	36	All American Timber Co., La Pine	Post/Pole	Est. 4,375 to 6,250 gt	12,000+ gt	44
	37	JTS Animal Bedding, Redmond	Whole Log Shavers and Baling Plant	3,125 gt for whole log shavers	12,000 to 18,000 gt for whole log shavers	21
	38	Round Tree Lodgepole Products, Crescent	Post/Pole	Est. 6,250 gt	Est. 18,000+ gt	35
	39	Southern Oregon Round Stock, Worden	Post/Pole Plant	12,500 gt	25,000 gt	50

**APPENDIX E - Current Annual Raw Material Consumption vs. Estimated Supply Needed at Full Capacity, By Individual Facilities and Operations**

Eastern Oregon Primary Wood Products Processing Facilities and Operations Update

September, 2012

<b>Facility or Operation Category</b>	<b>Map No.</b>	<b>Facility Name, City</b>	<b>Type of Facility</b>	<b>Current Annual Raw Material Consumed</b>	<b>Annual Raw Material Consumed if at Full Capacity</b>	<b>Current Percent Estimated Full Capacity Utilized</b>
	40, 75, 76	Integrated Biomass Resources, Wallowa	Firewood, Posts/Poles and Densified Fire Logs	10,000 gt	25,000 gt	40
	X68	Bear Creek Timber Products, Seneca	Post/Pole	0	9,0000 gt	0
	<b>Subtotal</b>			<b>44,928 gt</b>	<b>117,350 gt</b>	<b>38</b>
<b>Processing Residuals Users, Non-Pulp/Paper, Including Particle Board, and Pellet and Other Densified Wood Product Manufs.</b>	42	Blue Mtn. Lbr. Products, Reith	Pellet Plant	28,000 gt	28,000 gt	100
	43	Malheur Lbr. Co., John Day	Pellet and BioBrick Plant	17,000 gt	34,000 gt	50
	44	Woodgrain Millwork, Prineville	Pellet Plant	Est. 15,000 to 20,000 gt	Est. 40,000 gt	44
	45	Pacific Pellets, Redmond	Pellet Plant	28,000 gt (DF residuals)	56,000 gt (DF residuals)	50
	47	Collins Particle Board, Klamath Falls	Particle Board Plant (assume 35% MC)	84,000 bdt (est. 113,400 gt equivalent)	168,000 bdt	50
	48	Boise Cascade Particle Board Plant, Island City	Particle Board Plant (assume 35% MC)	135,000 bdt (est. 182,250 gt equivalent)	275,000 bdt	49
	62	Jeld-Wen MDF, Klamath Falls	MDF Plant (assume 35% MC)	Est. 28,000 bdt (est. 37,800 gt equivalent)		Est. 100
<b>Chip Barge Reload</b>	78	Boardman Chip Co. Barge Reload	Chip Barge Reload	Included in Boardman Chip Co. (No. 26)	N/A	N/A
	79	Tidewater, Boardman	Chip Barge Reload	Unknown	Unknown	Unknown
	<b>Subtotal</b>			<b>423,950 gt</b>	<b>793850 gt</b>	<b>53</b>
<b>Other Facilities Using Eastern Oregon Logs or Fiber</b>						
<b>Charcoal Briquette</b>	49	Kingsford Charcoal, Springfield	Charcoal Briquette Plant	100,000 to 120,000 bdt (20,000 to 24,000 bdt sourced from E. OR)	150,000 bdt	77
	<b>Subtotal</b>			<b>115,000 bdt</b>	<b>150,000 bdt</b>	<b>77</b>

**APPENDIX E - Current Annual Raw Material Consumption vs. Estimated Supply Needed at Full Capacity, By Individual Facilities and Operations**

Eastern Oregon Primary Wood Products Processing Facilities and Operations Update

September, 2012

<b>Facility or Operation Category</b>	<b>Map No.</b>	<b>Facility Name, City</b>	<b>Type of Facility</b>	<b>Current Annual Raw Material Consumed</b>	<b>Annual Raw Material Consumed if at Full Capacity</b>	<b>Current Percent Estimated Full Capacity Utilized</b>
<b>Biomass Energy</b>	21	Biomass One, White City	Biomass Power Plant (35 MW gross)	160,000 bdt (66% capacity) (est. 10,000 to 20,000 bdt from E. OR)	240,000 bdt (est. 35,000 to 40,000 bdt from E. OR)	67
	56	Roseburg Forest Products, Dillard	Cogen. Biomass Power Plant (40 MW gross)	?		?
	57	Seneca Sustainable Energy, Eugene	Cogen. Biomass Power Plant (20 MW gross)	?		?
	58	Freres Lbr., Evergreen Bio Power, Lyons	Cogen. Biomass Power Plant (10 MW gross)	?		?
			<b>Subtotal</b>	<b>160,000+ bdt</b>	<b>240,000+ bdt</b>	<b>67</b>
<b>Other Whole Log Users</b>	33	Foothills Firewood, Lyons	Firewood	Est. 3,300 gt	Est. 6,600 gt	50
	35	Parma Post & Pole, Parma, ID	Post/Pole Plant and Treatment Facility	3,750 gt (represents obtaining 30% of supply from E. Oregon)	10,000 gt (represents obtaining 80% of supply from E. Oregon)	38
	55	Roseburg Forest Products Log Reload, White City	Log Reload Facility	?		?
	69, 70	Coos Bay Chip and Log Export Facilities	Log and Chip Export Facilities	?		?
			<b>Subtotal</b>	<b>7050 gt</b>	<b>16,600 gt</b>	<b>42</b>
<b>Processing Residuals Users, Non-Pulp/Paper</b>	46	Bear Mtn. Forest Products, Cascade Locks	Pellet and BioBrick Plants, and Whole Log Shaver	50,000 to 55,000 gt (mostly DF). No estimate for whole log shaver.	75,000 to 80,000 gt	68
			<b>Subtotal</b>	<b>52,500 gt</b>	<b>77,500 gt</b>	<b>68</b>
<b>Pulp/Paper</b>	61	Georgia-Pacific, Wauna	Pulp/Paper Mill	Est. 630,000 bdt	?	?
	60	International Paper, Springfield	Pulp/Paper	Est. 357,000 bdt	?	?
	71	Georgia-Pacific, Toledo	Pulp/Paper	Est. 765,000 bdt	?	?
	59	Cascade Pacific Pulp, Halsey	Pulp/Paper	Est. 263,000 bdt	?	?

**APPENDIX E - Current Annual Raw Material Consumption vs. Estimated Supply Needed at Full Capacity, By Individual Facilities and Operations**

Eastern Oregon Primary Wood Products Processing Facilities and Operations Update

September, 2012

<b>Facility or Operation Category</b>	<b>Map No.</b>	<b>Facility Name, City</b>	<b>Type of Facility</b>	<b>Current Annual Raw Material Consumed</b>	<b>Annual Raw Material Consumed if at Full Capacity</b>	<b>Current Percent Estimated Full Capacity Utilized</b>
	72	SP Newsprint, Newburg	Pulp/Paper	Est. 561,000 bdt	?	?
	50	Clearwater Paper Corp., Lewiston, ID	Pulp/Paper	Est. 684,000 bdt	?	?
	51	Boise Wallula, Wallula, WA	Pulp/Paper	612,000 bdt (245,000 bdt from E. OR)	?	?
	73	Inland Empire Paper, Spokane, WA	Pulp/Paper	Est. 300,000 bdt	?	?
	52	Georgia Pacific/Ft. James, Camas, WA	Pulp/Paper	Est. 740,000 bdt	?	?
	74	Ponderay Valley Fibre, Osk, WA	Pulp/Paper	Est. 357,000 bdt	?	?
	53	Longview Fiber, Longview, WA	Pulp/Paper	Est. 1,428,000 bdt	?	?
	54	Weyerhaeuser, Longview, WA	Pulp/Paper (2)	Est. 918,000 bdt	?	?
			<b>Subtotal</b>	<b>7.6 million bdt</b>	<b>7.6 million bdt</b>	<b>&gt;90%</b>

## **APPENDIX F**

### **Whole Log Users, Preferred Economic Log Diameters and Species**

**Eastern Oregon Primary Wood Products Processing Facilities and Operations Update**

September, 2012

## APPENDIX F - Whole Log Users, Preferred Economic Log Diameters and Species

Eastern Oregon Primary Wood Products Processing Facilities and Operations Update

September, 2012

**NOTE:** List was restricted to whole log users with manufacturing plants. Log home manufacturers were not included. Firewood processors were included only if the business shipped more than 1,000 cords/yr. Specialty sawmills were not included due to limited competition for particular species, such as hybrid poplar and juniper. "Preferred Economic Log Diameter" is defined as the small-end diameter (inside bark) which a particular mill can process most efficiently and profitably. "Small-Side" and "Large-Side" refers in the case of sawmills to two different processing lines preceded by a log sort line. The "large-side" is usually a vertical band saw and carriage. "Small sides" have a variety of sawing configurations (e.g. sharp chain, end-dog with two vertical bands, end-dog with quad vertical band, single-pass with chipping heads and horizontal bank of circular saws etc.). Abbreviations under "Preferred Species" include "pine" (includes ponderosa pine and sugar pine), ponderosa pine (PP), larch (WL), white fir (WF), Douglas-fir (DF), lodgepole pine (LPP), Engelmann spruce (ES) and subalpine fir (AF). "X" is used for some map numbers to designate facilities that are temporarily closed or closed, but still have equipment and machinery in place.

Map No.	Manufacturers	Small Side Process Line		Large Side Process Line		Preferred Species or Species Grading Grp.	Secondary Species or Grading Grp.
1	Boardman Chip Sawmill	4	8			DF, WL and WF	ES, LPP and PP
2	Prineville Sawmill			14	16	PP	WF
3	Blue Mtn. Lbr. Co.	6	12	16	22	DF, WL and WF	ES, LPP and PP
X63	Blue Mtn. Millworks			18	22	DF, WL	
5	Thomas Lbr.			12	14	PP	WF
6	Malheur Lbr.			12	14	PP	WF
7	Boise Elgin Sawmill	7	10			DF, WL and WF	ES, LPP and PP
8	Fremont Sawmill	5	10	12	16	PP and WF	
9	Boise Pilot Rock Sawmill			10	14	PP and WF	
X64	Grant Western			12	16	PP	WF
X65	Prairie Wood Products	6	10			DF, WL and WF	ES, LPP and PP
12	Boise Mt. Emily	6	10	12	16	PP	
13	Warm Springs FPI	8	10	14	18	DF, WL and WF	PP, ES and LPP
14	Interfor Pacific	10	12	16	20	PP and WF	LPP
15	Columbia Plywood			12	16	WF	
16	Boise Elgin Plywood			12	16	WF, DF, WL	ES, LPP and PP
38, 39, 40, X68	Post/Pole Plants	4	8			LPP and PP	
31, 37	Whole Log Shavers	4	14			LPP and PP	WF
32, 34, 40	Firewood Processors			12	16	LPP, PP	



## **APPENDIX G**

### **Estimated Current Percent and Quantity Non-Federal and Federal Supply**

Eastern Oregon Primary Wood Products Processing Facilities and Operations Update

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## APPENDIX G - Estimated Current Percent and Quantity Non-Federal and Federal Supply

Eastern Oregon Primary Wood Products Processing Facilities and Operations Update

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Facility or Operation Category	Map No.	Facility Name, City	Type of Facility	Current Annual Raw Material Consumed (MMBF, gt or bdt)	Current % Non-Federal Supply	Current Non-Federal Supply (MMBF, gt or bdt)	Current % Federal Supply	Current Federal Supply (MMBF, gt or bdt)
<p><b>NOTE:</b> List of facilities and operations restricted to those actually located or operating in Eastern Oregon. Processing residuals users, such as particle board, MDF and fuel pellets, not included. Log home manufacturers were not included either. Mobile chippers/grinders were included only if they shipped more than 35,000 bdt/yr. Firewood processors were included only if the business shipped more than 1,000 cords/yr. Specialty sawmill category includes the large hybrid poplar mill near Boardman and some juniper mills. Log consumption is shown in Scribner log scale (Eastside), green tons (gt) or bone dry tons (bdt), depending on customary practices of a particular industry sub-sector. "X" is used for some map numbers to designate facilities that are temporarily closed or closed, but still have equipment and machinery in place.</p>								
<b>Sawmills, Small</b> (1.5 MMBF - 25 MMBF/yr, Log Consumption, Full Capacity)	1	Boardman Chip Co., Sawmill	Stud Mill (chip mill and barge reload listed separately)	5.5	40	2.2	60	3.3
	2	Prineville Sawmill, Prineville	Specialty Pine Sawmill (chipping facility listed separately)	2.6	90	2.34	10	0.26
	3	Dodge Logging, Blue Mtn. Lbr. Products, Reith	Sawmill, Random Length Dimension, Large and Small Sides (pellet mill listed separately)	13.5	40	5.4	60	8.1
	X63	Dodge Logging, Blue Mtn. Millworks, Walla Walla, WA	Sawmill, Specialty, Long Lengths, Timbers and Beams (currently not operating, usually 95% prvt.)	0	0	0	0	0
<b>Sawmills, Medium</b> (26 MMBF - 65 MMB, Log Consumption, Full Capacity)	5	Jeld-Wen Thomas Lbr., Klamath Falls	Sawmill	28	90	25.2	10	2.8
	6	Malheur Lbr. Co., John Day	Sawmill (see whole log shaver and pellet/biobrick plants listed separately)	27	65	17.55	35	9.45
	7	Boise Cascade Elgin Sawmill, Elgin	Stud Mill. Large and Small Sides (chipping operation listed separately)	36	80	28.8	20	7.2
	8	Collins Fremont Sawmill, Lakeview	Sawmill, Large and Small Sides	40	75	30	25	10
	9	Boise Cascade Pilot Rock (aka Kinzua), Pilot Rock	Sawmill, Large and Small Sides (chipping operation listed separately)	44	80	35.2	20	8.8
	X64	D.R. Johnson, Grant Western, John Day	Sawmill, Large and Small Sides (estimate would need 90% Fed timber to reopen)	0	0	0	0	0
	X65	D.R. Johnson, Prairie Wood Products, Prairie City	Stud Sawmill (estimate would need 90% Fed. timber to reopen)	0	0	0	0	0
<b>Sawmills, Large</b> (66+ MMB, Log Consumption, Full Capacity)	12	Boise Cascade Mt. Emily Sawmill, La Grande	Sawmill, Small Side (also has Large Side, but not currently used)	12	80	9.6	20	2.4
	13	Warm Springs Forest Products Industries, Warm Springs	Sawmill, Large and Small Sides	46	100	46	0	0
	14	Interfor Pacific, Gilchrist	Sawmill, Large and Small Sides	75	34	25.5	66	49.5
<b>Subtotal (MMBF)</b>				<b>329.6</b>	<b>Avg. 63%</b>	<b>227.79</b>	<b>Avg. 28%</b>	<b>101.81</b>

## APPENDIX G - Estimated Current Percent and Quantity Non-Federal and Federal Supply

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<b>Plywood Plants</b>	15	Columbia Plywood, Klamath Falls	Specialty Hardwood Plywood Plant	22	100	22	0	0
	16	Boise Cascade Elgin Plywood Mill, Elgin	Plywood	71	80	56.8	20	14.2
	<b>Subtotal (MMBF)</b>			<b>93</b>	<b>Avg. 90%</b>	<b>78.8</b>	<b>Avg. 10%</b>	<b>14.2</b>
<b>Specialty Sawmills</b>	17	Joseph Juniper, Burns	Specialty Juniper Sawmill (2 portable mills)	1200	70	840	30	360
	X66	Juniper Mill at Reach, Klamath Falls	Specialty Juniper Sawmill, Two Sides (circle saw and scragg mill)	0	0	0	0	0
	19	Upper Columbia Sawmill	Specialty Hybrid Poplar Sawmill	426,000	100	426000	0	0
<b>Subtotal (gt)</b>			<b>427,200</b>	<b>Avg. 85%</b>	<b>426840</b>	<b>Avg. 15%</b>	<b>360</b>	
<b>Biomass Energy</b>	X67	D. R. Johnson, COGENCO, Prairie City	Cogen. Biomass Power Plant (9.4 MW) (estimate would need 80% Fed. supply to reopen)	0	0	0	0	0
<b>Subtotal (bdt)</b>			<b>160,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Chipping, Stationary</b>	22	Boise Cascade, Elgin Sawmill, Elgin	Chipping Operation	15,000	80	12,000	20	3,000
	23	Boise Cascade, Pilot Rock Sawmill, Pilot Rock	Chipping Operation	12,500	80	10,000	20	2,500
	24	Prineville Sawmill, Chipping Facility, Prineville	Specialty Pine Sawmill and Chipping Facility (currently chipping tops, no additional volume shown)	0	0	0	0	0
	25	WeyCo Chip Plant, Prineville	Chipping Facility	56,000	90	50,400	10	5,600
	26, 78	Boardman Chip Co., Boardman	Chip Plant and Barge Reload (Small Log Sawmill Listed Separately)	70,000	40	28,000	60	42,000
<b>Subtotal (bdt)</b>			<b>153,500</b>	<b>Avg. 73%</b>	<b>100,400</b>	<b>Avg. 28%</b>	<b>53,100</b>	
<b>Chipping, Mobile</b>	27	Lee Smith Logging, Chemult	Mobile Chipping	40,000	90	36000	10	4000
	28	Quicksilver, La Pine	Mobile Chipping and Grinding	55,000	15	8250	85	46750
	29	T2, Inc., Sweet Home	Mobile Chipping and Grinding	118,400	25	29600	75	88800
<b>Subtotal (bdt)</b>			<b>213,400</b>	<b>Avg. 43%</b>	<b>73850</b>	<b>Avg. 57%</b>	<b>139550</b>	

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<b>Hardboard</b>	30	Collins Hardboard, Klamath Falls	Hardboard Plant	60,000	90	54000	10	6000
<b>Subtotal (bdt)</b>				<b>60,000</b>	<b>Avg. 90%</b>	<b>54,000</b>	<b>Avg. 10%</b>	<b>6,000</b>
<b>Other Whole Log Users, Including Post/Pole Plants, Whole Log Shavers, and Large Firewood Processors</b>	31	Malheur Lbr. Co., John Day	Whole Log Shaver	740	65	481	35	259
	32	Great Northern, John Day	Firewood	2,600	90	2340	10	260
	33	Foothills Firewood, Lyons	Firewood	3,300	50	1650	50	1650
	34	Central Oregon Firewood, Bend	Firewood	4,400	10	440	90	3960
	36	All American Timber Co., La Pine	Post/Pole	5,313	25	1328.25	75	3984.75
	37	JTS Animal Bedding, Redmond	Whole Log Shavers and Baling Plant	3,125	25	781.25	75	2343.75
	38	Round Tree Lodgepole Products, Crescent	Post/Pole	6,250	15	937.5	85	5312.5
	39	Southern Oregon Round Stock, Worden	Post/Pole Plant	12,500	95	11875	5	625
	40, 75, 76	Integrated Biomass Resources, Wallowa	Firewood, Posts/Poles and Densified Fire Logs	10,000	30	3000	70	7000
	X68	Bear Creek Timber Products, Seneca	Post/Pole	0	0	0	0	0
<b>Chip Barge Reload</b>	78	Boardman Chip Co. Barge Reload	Chip Barge Reload	See Boardman Chip Co. (No. 26)	N/A	N/A	N/A	N/A
	79	Tidewater Chip Barge Reload	Chip Barge Reload	Unknown	Unknown	Unknown	Unknown	Unknown
<b>Subtotal (gt)</b>				<b>48,228</b>	<b>Avg. 45%</b>	<b>22,833</b>	<b>55%</b>	<b>25,395</b>