

01/19/2018  
Overview:  
Forestry  
Development  
Opportunities  
and  
Restrictions

<TARGET><BILL></BILL><SUBJECT>01-19-2018 Overview  
Forestry Development Opportunities and  
Restrictions</SUBJECT><COMM>SRES30</COMM></TARGET>

# Forest Products Industry Update

*Senate Resources Committee*



**Heidi Hansen, Deputy Commissioner**  
**Chris Maisch, Division of Forestry Director & State Forester**  
**Alaska Department of Natural Resources**  
**January 19, 2018**

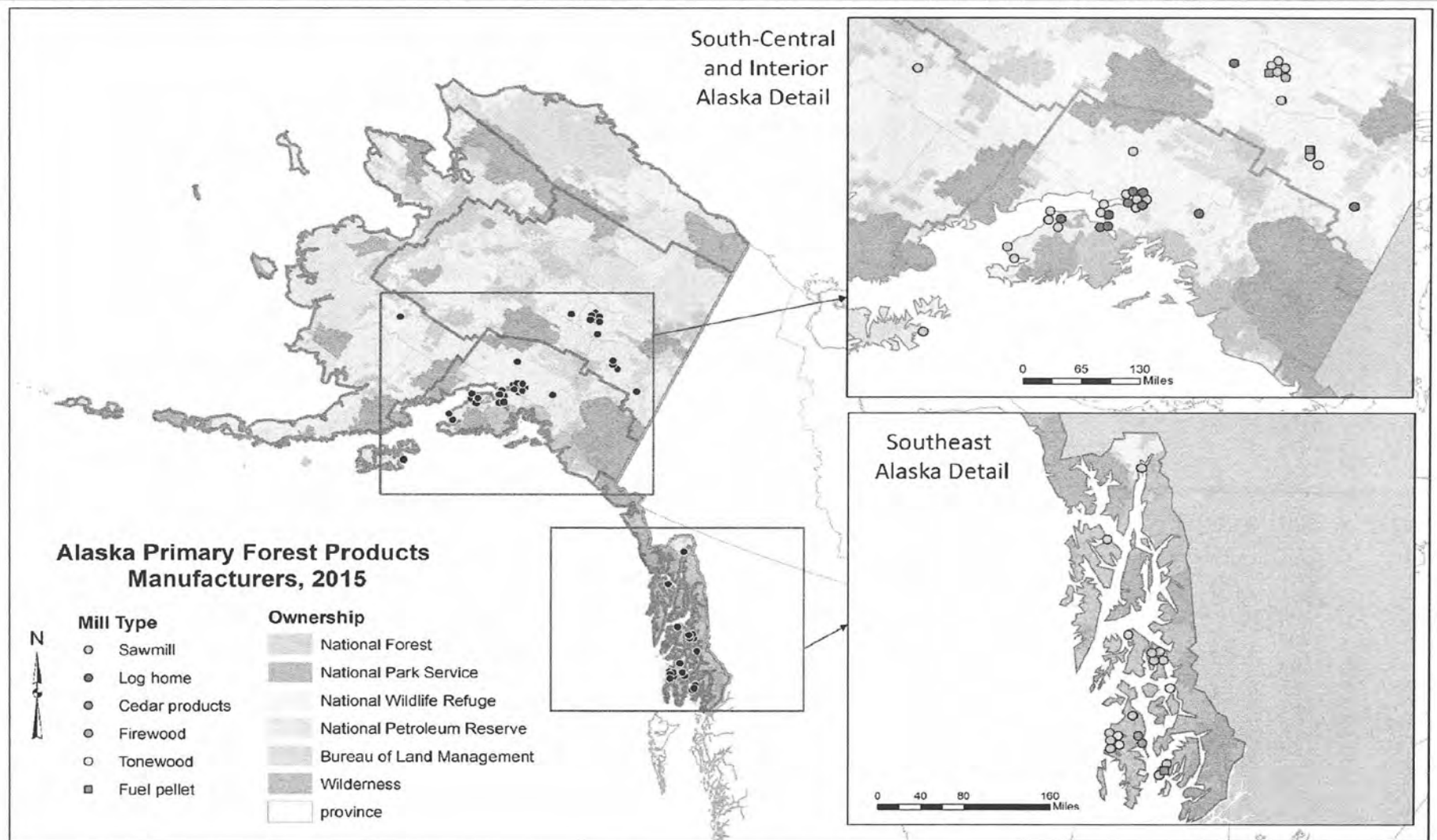


# ALASKA'S FOREST PRODUCTS SECTOR

## - STATEWIDE OVERVIEW -

- Regional differences in scale, markets, products and type of facilities
- Primary manufacturing
- Log export
- Secondary manufacturing
- Non-timber forest products
- Woody biomass projects – scale and types of fuels

# PRIMARY FOREST PRODUCTS BUSINESS LOCATIONS



# PRIMARY MANUFACTURING FACILITIES

**Viking Sawmill in Craig**

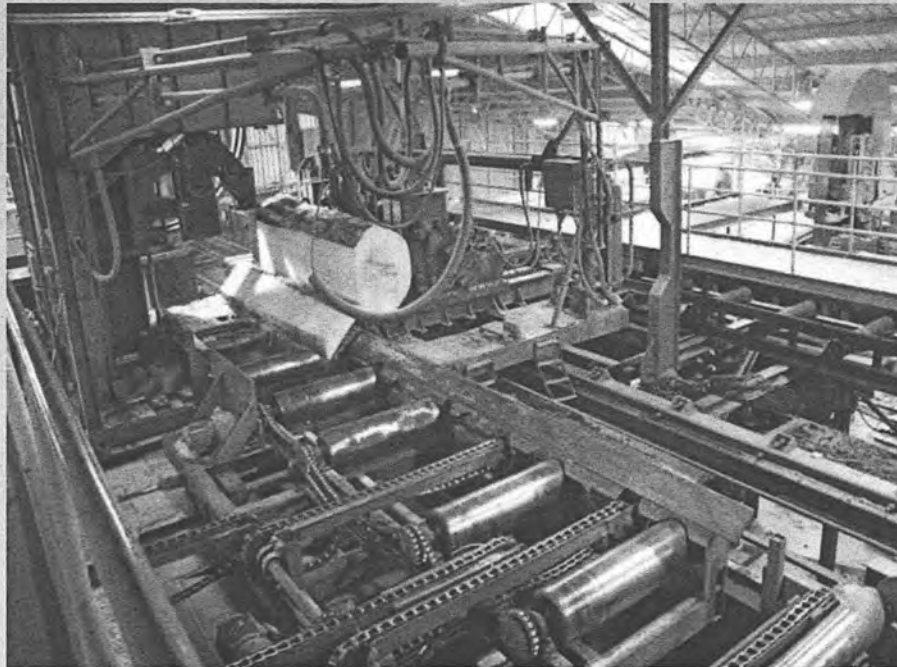


**Tidewater and Road Access  
(Aerial view at Viking Sawmill)**

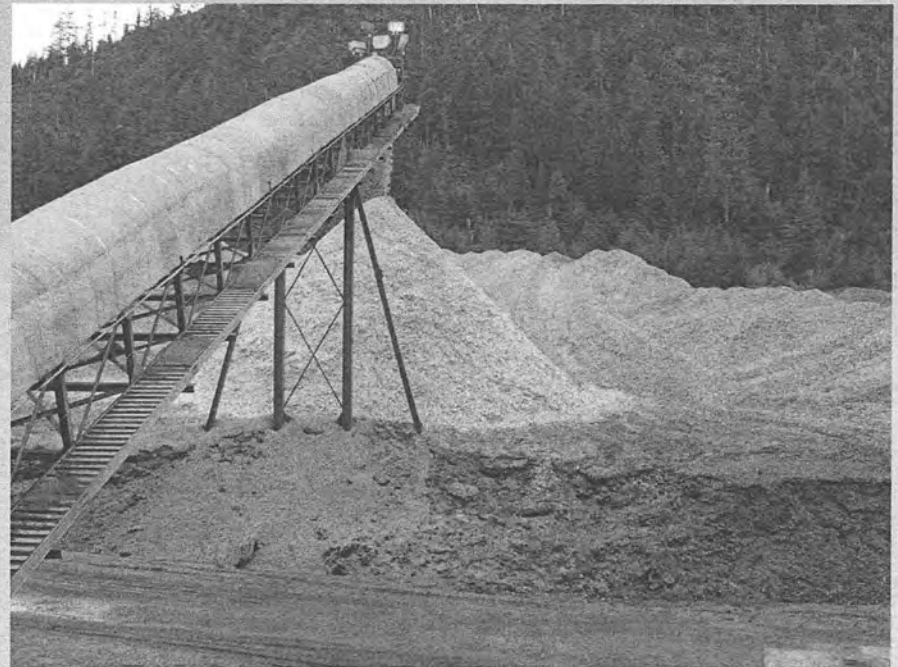


# PRIMARY MANUFACTURING FACILITIES

**Head Rig Cutting Old Growth Log  
Producing Lumber**



**Byproducts:  
Chips and Sawdust**



# PRIMARY MANUFACTURING LOG EXPORT

**Loading Bundles of Young Growth Logs for Export**

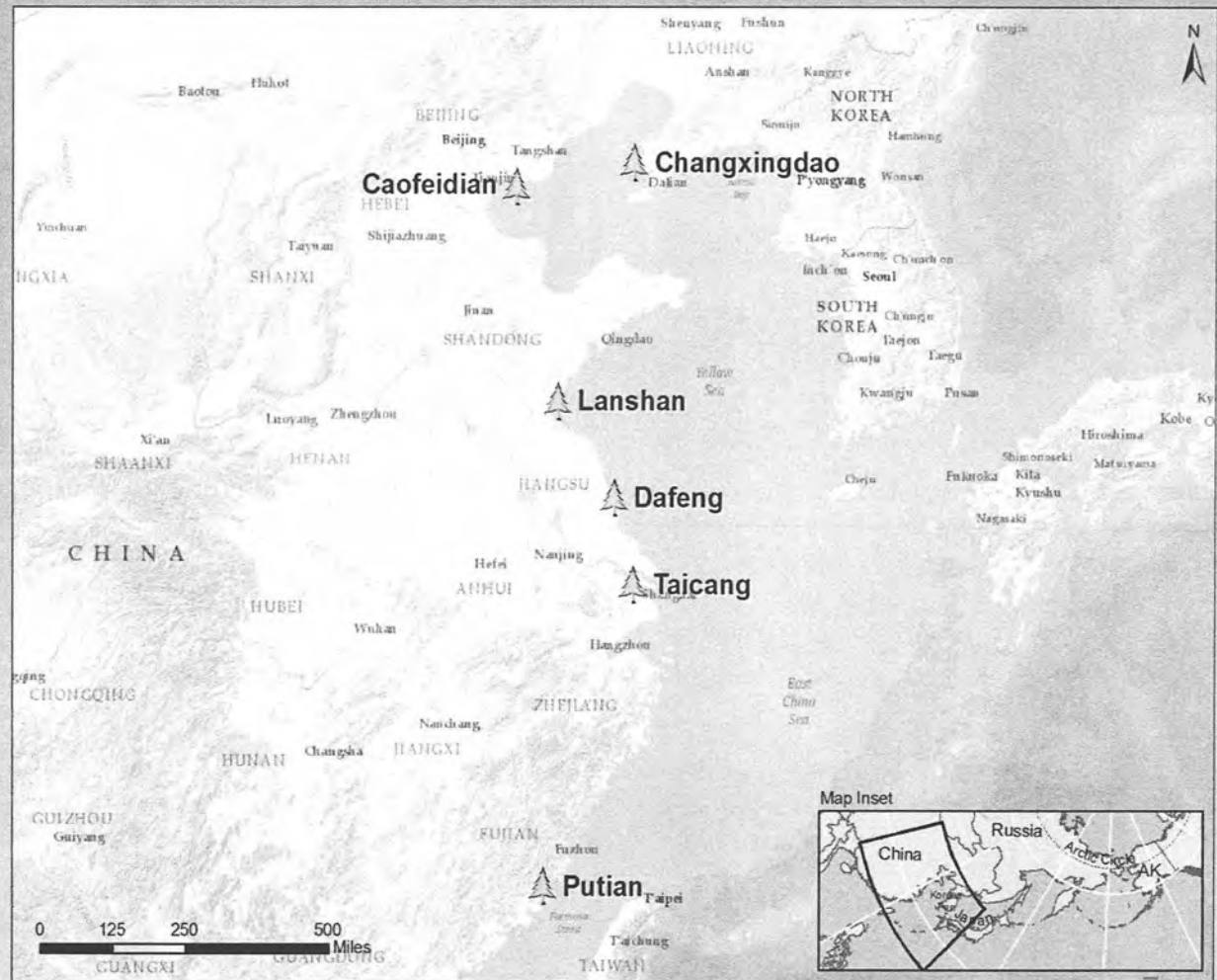


**Edna Bay Log Transfer Facility and Young Growth Logs**



# LOG EXPORTS AND PHYTOSANITARY INSPECTION

- DNR Division of Agriculture provides inspection service and third party fumigation inspections on-board ship in Korea for logs heading to China ports without onshore facilities
- Industry pays fee to cover inspections
- Onshore fumigation is now available in 6 ports
- Value last year: \$74.3 million in exports



# PRIMARY MANUFACTURING FACILITIES

**Superior Pellet LLC- North Pole**



**Pellet Press (Two Units)**



# PRIMARY MANUFACTURING FACILITIES

**Wood Pellets for Commercial and Residential Space Heating Markets**



# PRIMARY MANUFACTURING FACILITIES SMALLER SCALE

**Log Turning Mill**  
**Log Homes and Cabin Kits**

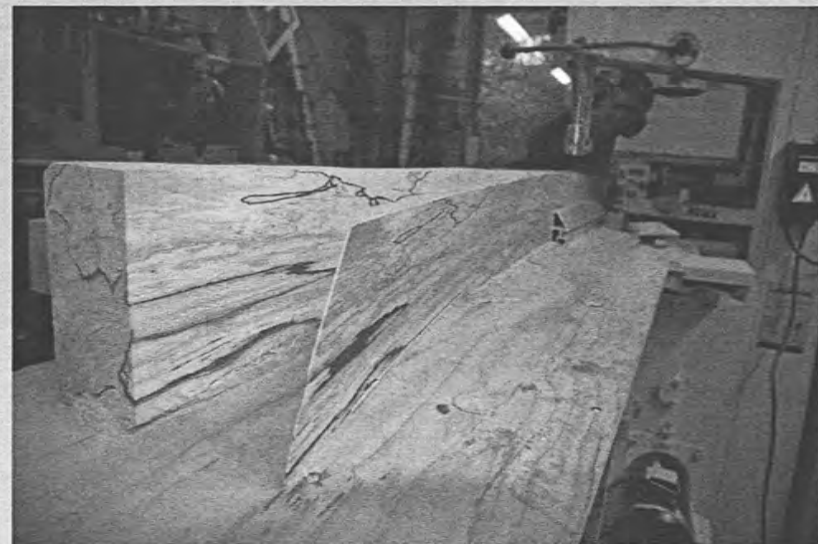


**Wood Miser Band Mill**  
**Lumber and Timbers**



# SECONDARY MANUFACTURING FACILITIES

## FAIRWEATHER SKI WORKS - HAINES



# SECONDARY MANUFACTURING FACILITIES

## GREAT ALASKA BOWL COMPANY - FAIRBANKS

### Nested Birch Bowls



### Production Floor

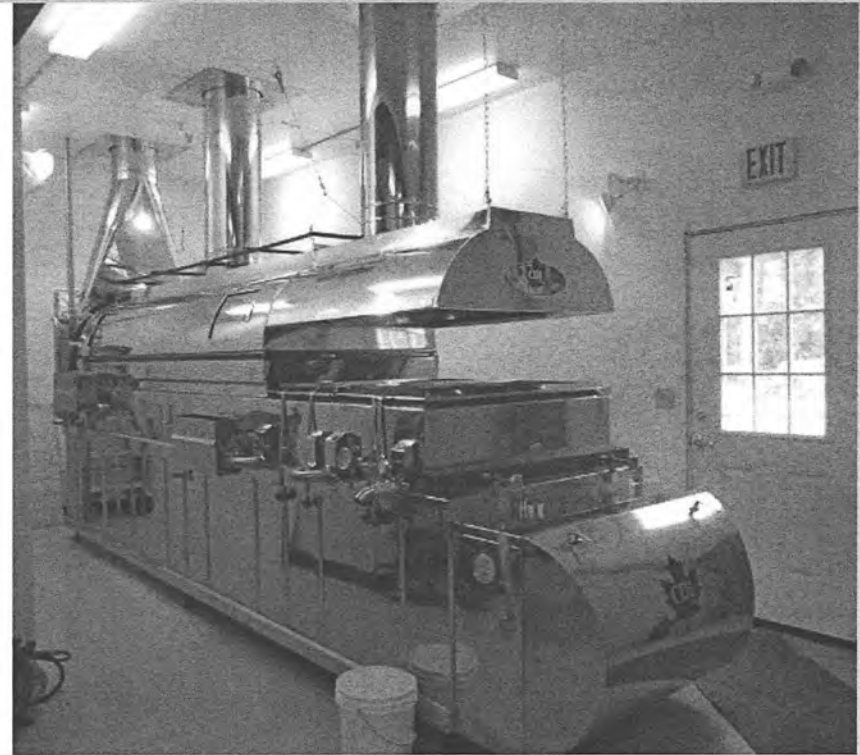


# Non Timber Forest Product Manufacturing Facilities

**Kahiltna Birch Works**

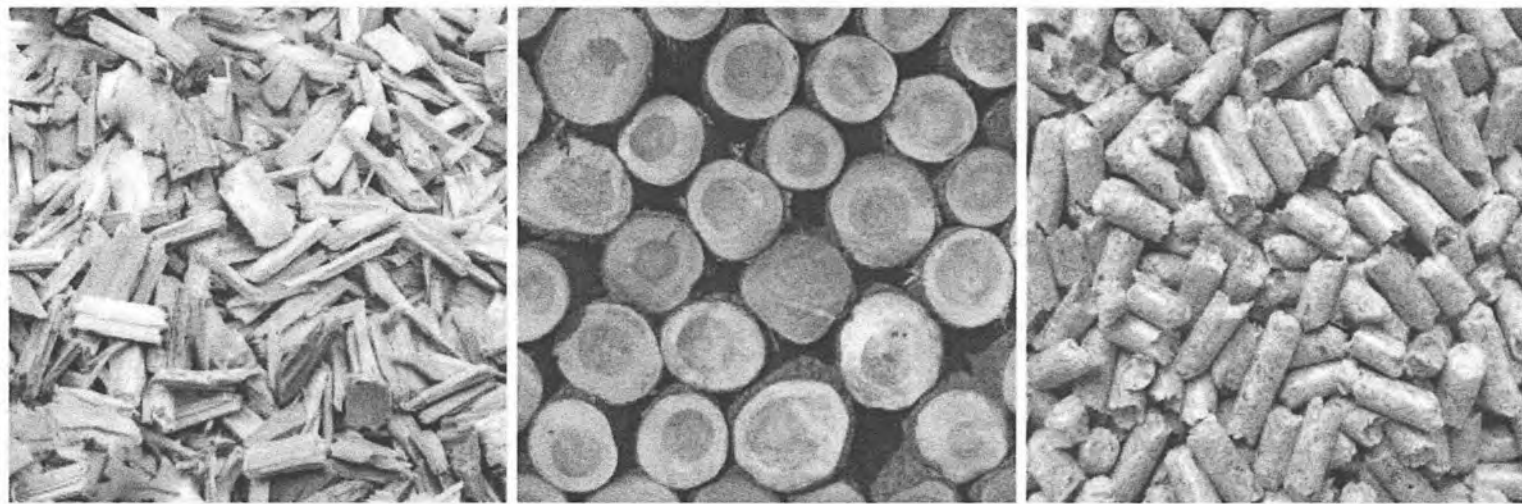
**Sap Evaporator**

**Sap to Syrup Ration 70:1**



# Woody Biomass and Energy

- Types of Wood Fuels Used
- Scale of Operations From Commercial to Residential
- Space Heating - Most Common in AK
- Electrical Generation - Tentative Steps
- Combined Heat and Power - Larger Scale

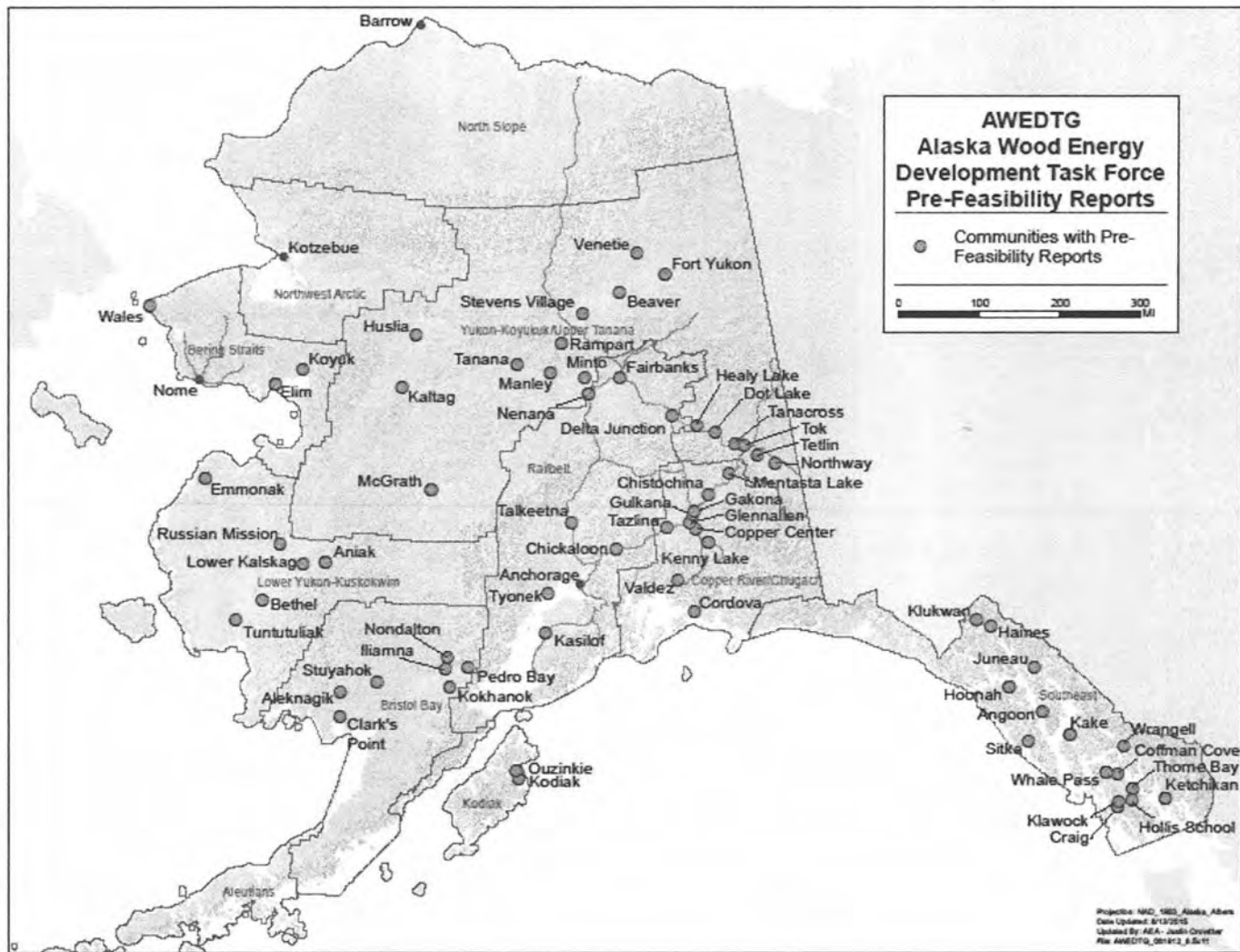


**Wood Chips**

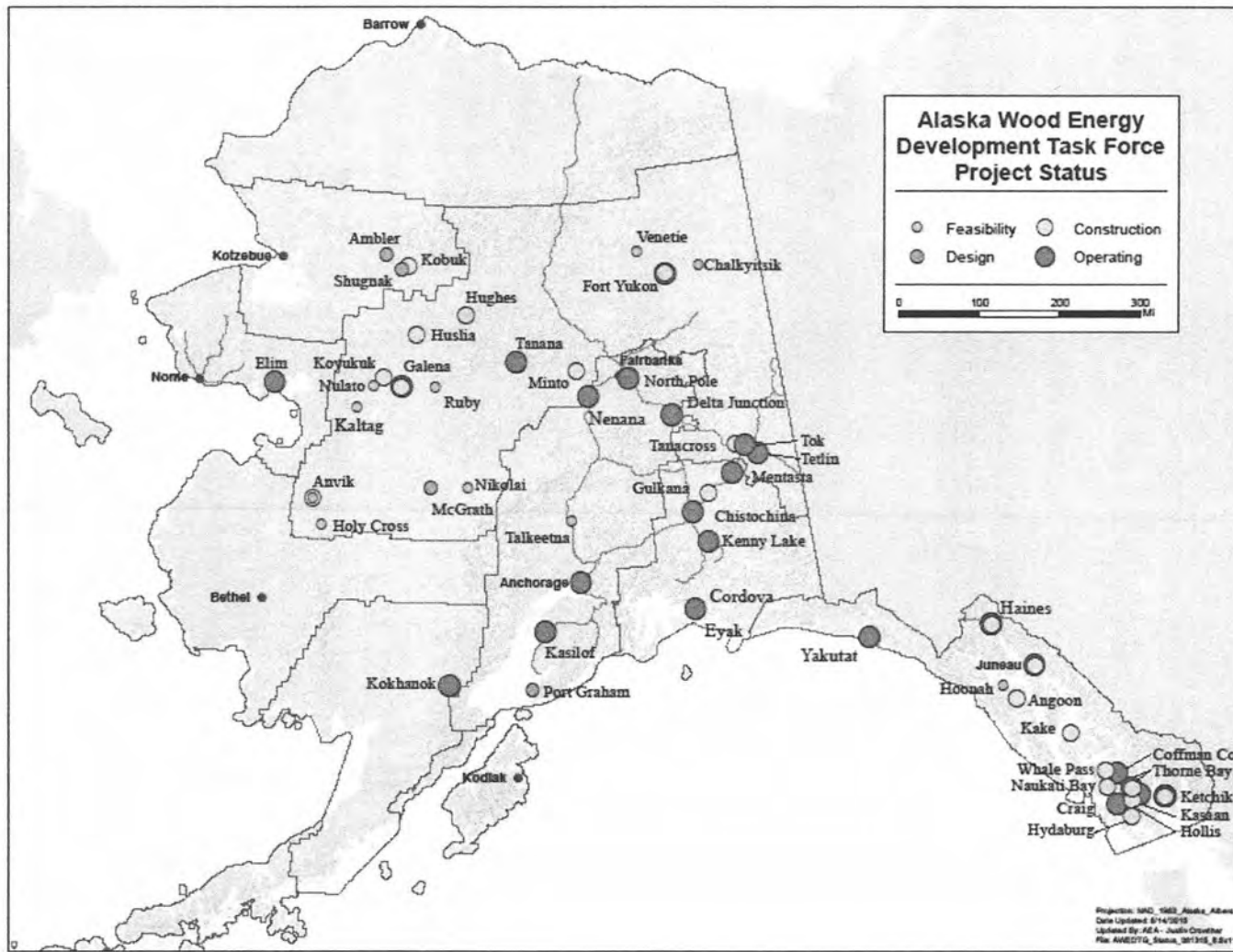
**Solid Wood**

**Pellets**

# LOCATIONS OF BIOMASS ENERGY PRE-FEASIBILITY WORK



# LOCATIONS OF BIOMASS ENERGY PROJECTS

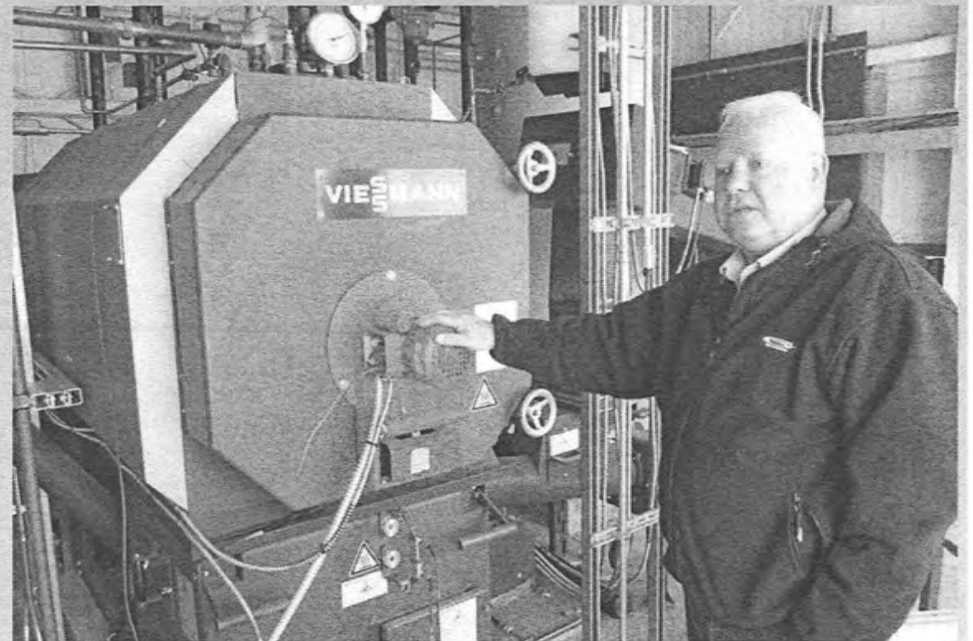


# KETCHIKAN AIRPORT PELLET FUEL HEATING PROJECT

**Pellet Silo Next to Boiler Building**

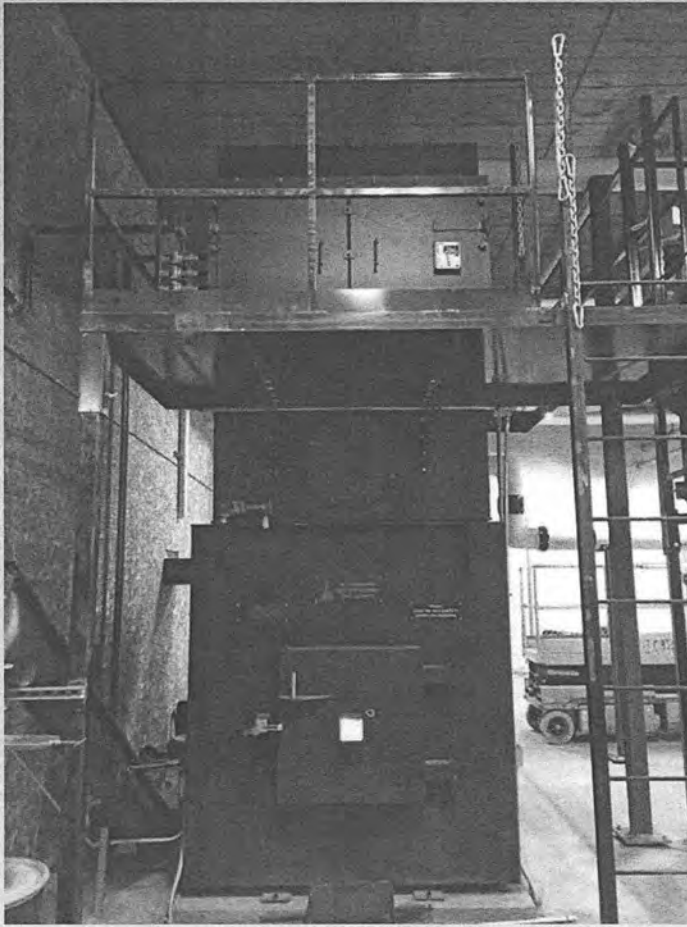


**Pellet Boiler**

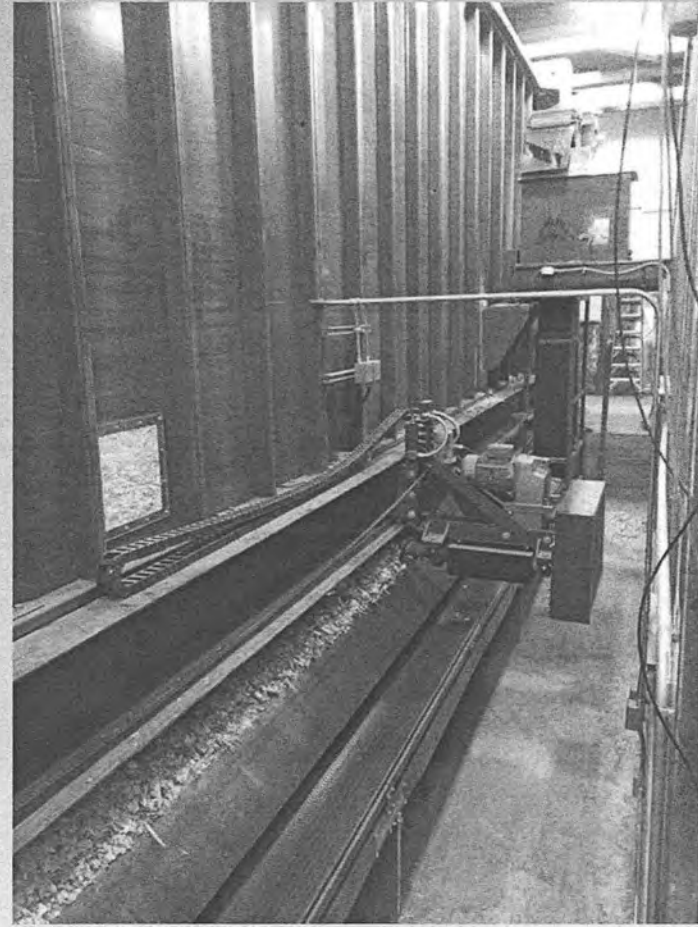


# GALENA WOODY BIOMASS HEATING PROJECT

**Wood Boiler**



**Chip Auger and Conveyer to Day Bin  
and Boiler**



# GALENA WOODY BIOMASS HEATING PROJECT

**Covered Storage for Chips**



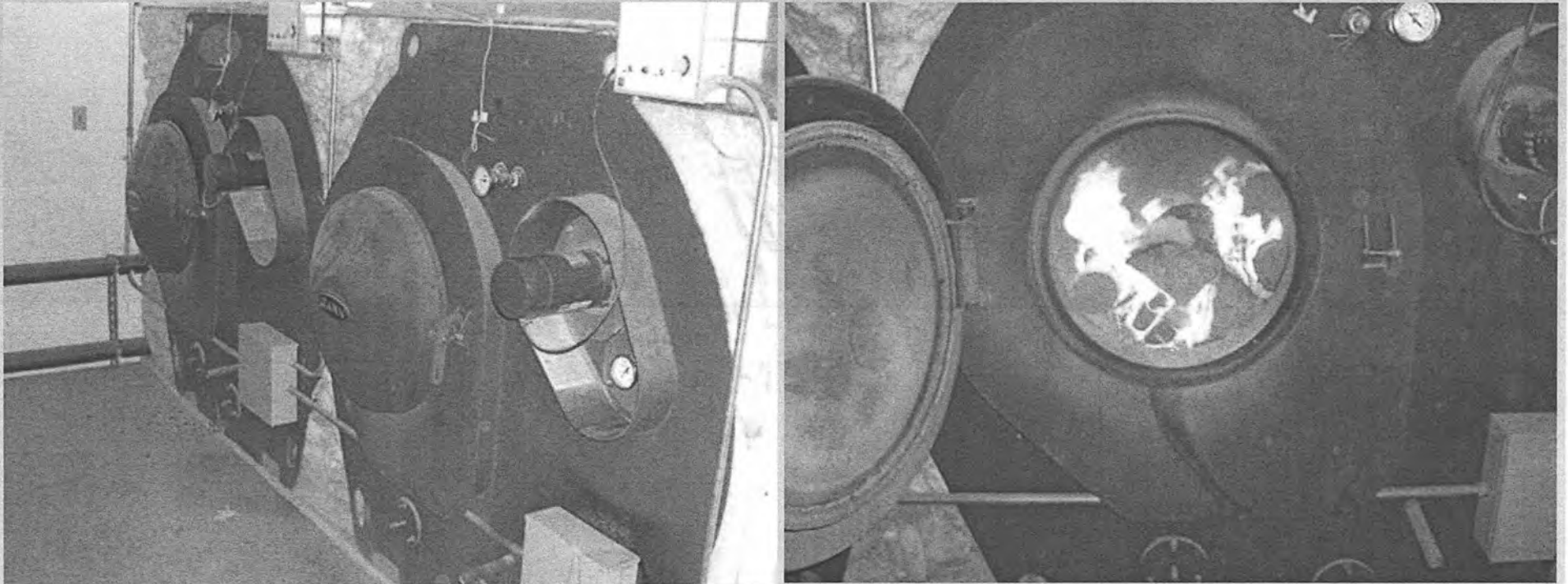
**Timber Harvest Operations**



# TANANA SOLID WOOD FUEL HEATING PROJECT

**Garn Wood Fired Heating System  
Model 20000**

**Produces 450,000 BTUs per Hour  
Energy Stored in Water Jacket**



# COMMUNITY SUSTAINABILITY AND ECONOMY

**Tanana Resident Cuts and Hauls  
Wood to Sell to the City**

**Projects Create Jobs and Keeps  
More Dollars in the Community**

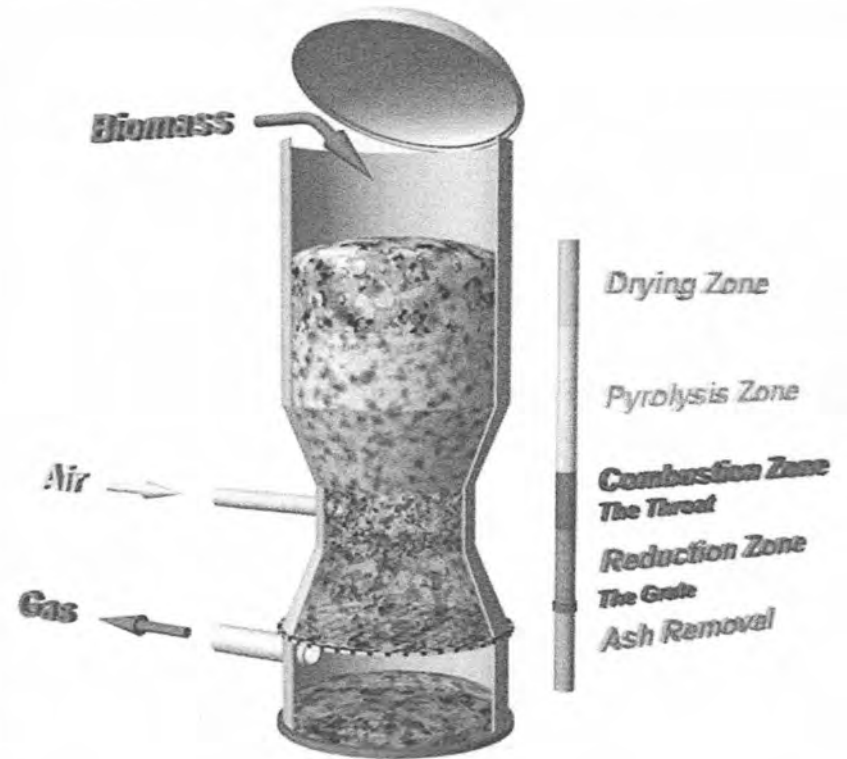
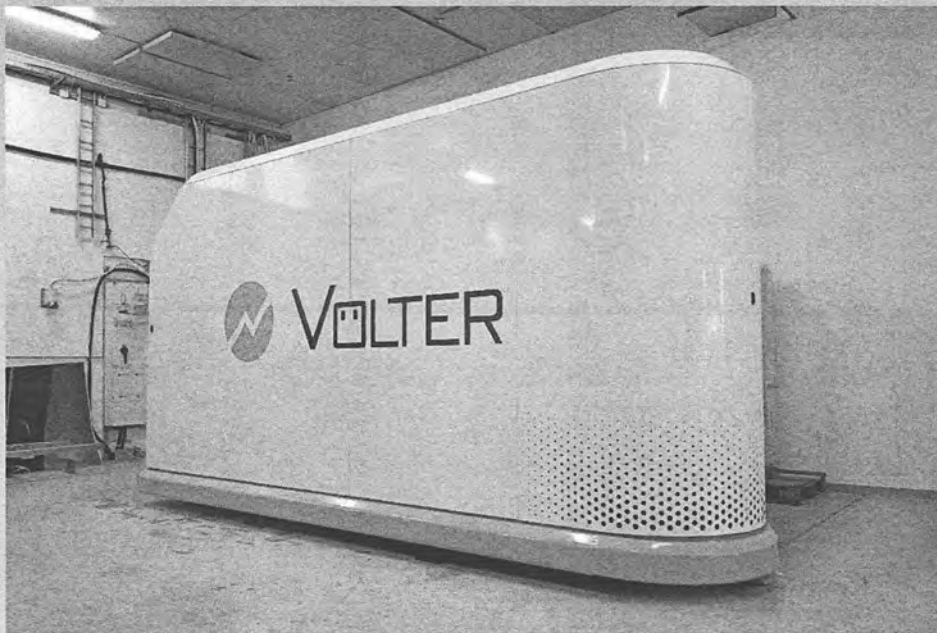


# BIOMASS COMBINED HEAT AND POWER

## SMALL SCALE VIA GASIFICATION OF WOOD CHIPS

Fairbanks Northstar Borough Will  
Install and Test a Volter 40 in the Big  
Dipper Ice Arena in 2018 - 2,380  
MMBTU and 280,000 kWh

General Process for Gasification of  
Biomass

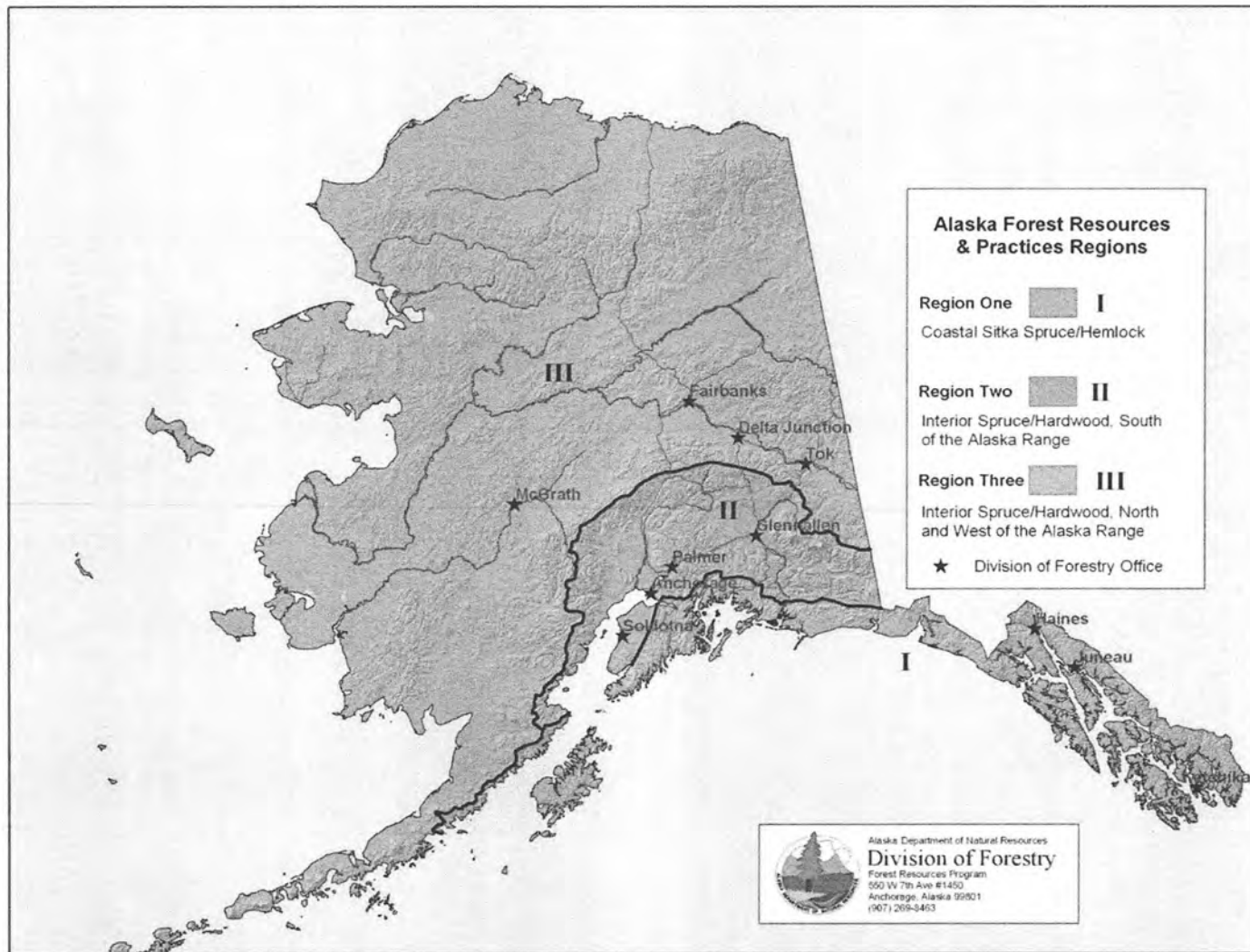


## WHAT IS NEEDED TO MAINTAIN OR GROW THE FOREST PRODUCTS SECTOR IN ALASKA

- A stable land base for forest management that produces a consistent offering of timber sales
- A mix of private, state, Mental Health Trust and University Land Trust, and federal land
- Access to domestic and international markets
- A range of timber sale options, including longer-term commitments of supply (10 to 20 years)
- Continued use of Good Neighbor Authority (GNA) to partner with the U.S. Forest Service to conduct work on national forest lands

# FOREST RESOURCES & PRACTICES ACT

## - FOREST TYPES ACROSS ALASKA -



# Who Owns Commercial Forest Lands

## Alaska Forest Land by Ownership 126 million acres total

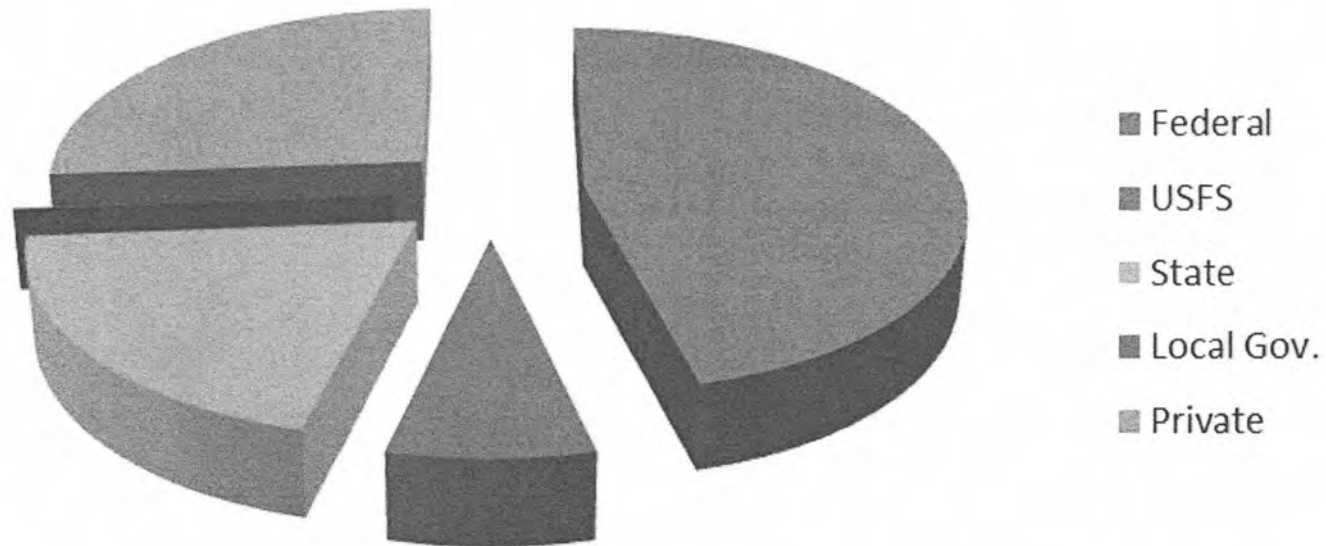
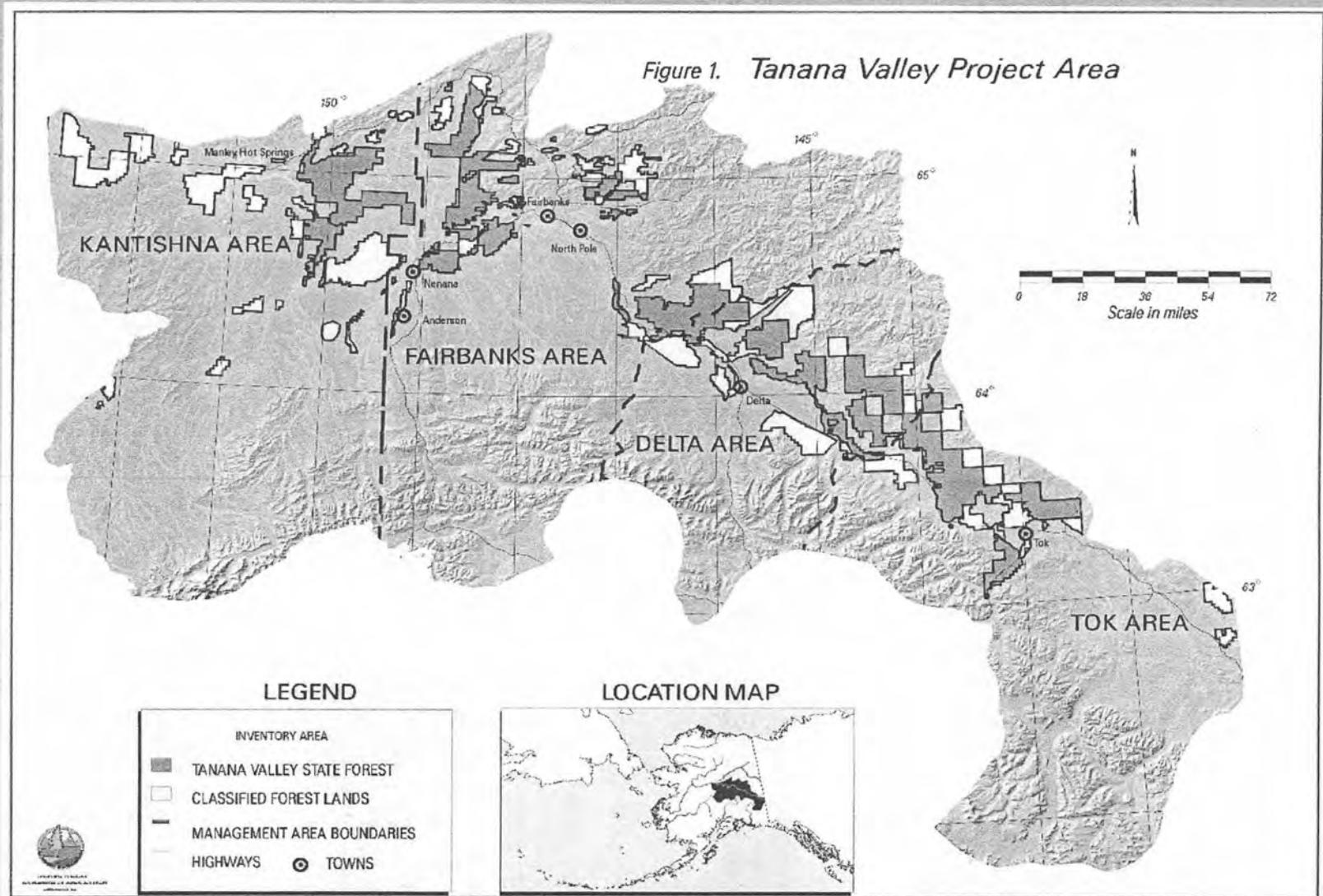


Figure 2 Alaska Forest Land Ownership

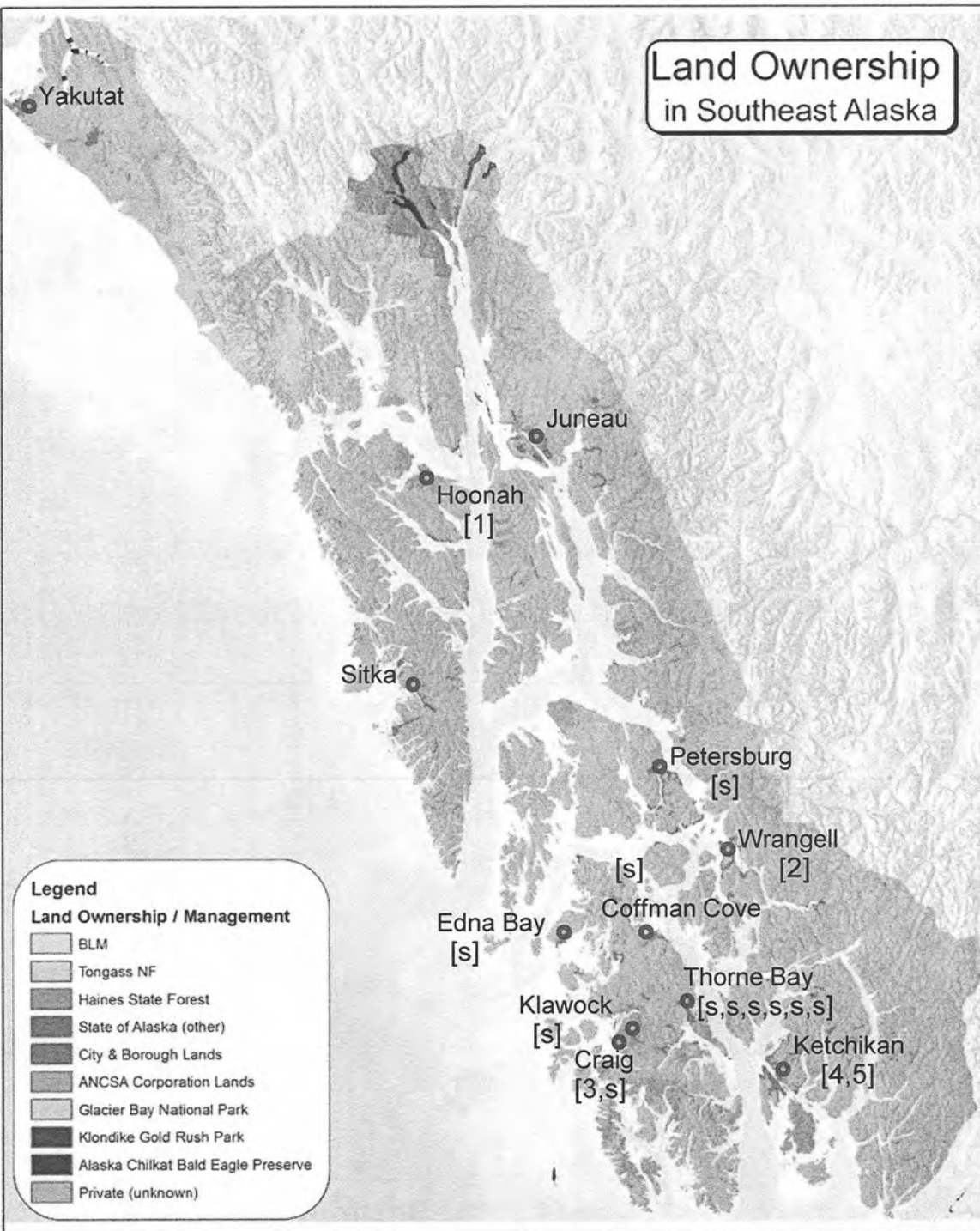
## STATE FORESTS AND LAND CLASSIFIED FORESTRY IN DNR AREA PLANS

- Haines State Forest (1982) – first in the system; established by AS 41.15.300 at 286.2 thousand acres
- Tanana Valley State Forest (1983) – established by AS 41.17.400 at 1.8 million acres
- Southeast State Forest (2010/11) – established by AS 41.17.500 at 48.5 thousand acres
- Candidate state forests: Susitna, Copper River, Icy Bay and Kenai per AO-258 recommendations

# TANANA VALLEY STATE FOREST AND FORESTRY CLASSIFIED LANDS IN THE TANANA BASIN



# Land Ownership in Southeast Alaska



## SE Mills

- [1] Icy Strait Lumber
- [2] Silver Bay Logging
- [3] Viking Lumber Company
- [4] Pacific Log & Lumber
- [5] Ketchikan Veneer Mill
- [s] small mill

## STATE TIMBER SALE TYPES

### 5 METHODS TO ACCOMPLISH COMMERCIAL DISPOSAL

- Competitive Sales (AS 38.05.120)
- Small Negotiated Sales (AS 38.05.115)
- Negotiated Sales for Value Added Products (AS 38.05.123)
- Large Negotiated Sales (AS 38.05.118)
- Salvage Sales (AS 38.05.117)
  
- Personal Use Sales (AS 38.05.850)

# TIMBER SALE LEGISLATION SIGNING – VIKING LUMBER UPDATES TO AS 38.05.118 SALE CRITERIA



## STEPS IN THE TIMBER SALE PROCESS

- Five Year Schedule of Timber Sales (FYSTS) AS 38.05.113
  - Publish every two years and a sale must appear in one of the two FYSTS immediately proceeding the sale
- Best Interest Finding (BIF) AS 38.05.035 (e)(6)(A)
- Forest Land Use Plan (FLUP) AS 38.05.112
  - Must address site specific conditions and be consistent with guidance in Area and Forest Management Plans
- The BIF and FLUP Can Be Issued Concurrently or Separately
  - Each is an appealable document
  - The BIF requires a 21 day comment period and the FLUP a 30 day comment period
  - If issued concurrently, they both run 30 days

# LONG-TERM TIMBER SALES – SOME CHALLENGES

- DOF has prepared longer-term timber sales for several different projects under different authorities – some observations
- Tok Project for Combined Heat and Power Facility
  - Alaska Power and Telephone proposal for a power plant fueled by wood chips – began a .118 sale process
  - Competitive interest in the long-term sale by a second company Young's Timber
  - Switched to a .120 process, completed BIF and first set of FLUPs for five year period with three more five year cycles of FLUPs planned
  - Offered sale, no bids. Still available over-the-counter
- Galena Space Heating Project
  - Using .120 process for 20 year sale – process working well
- Superior Pellet Project
  - Long-term (10 year) wood supply for mill, used .123 sale process
  - Process completed and contract ready to sign, delayed due to energy price collapse making demand for wood pellets drop significantly

# LONG-TERM TIMBER SALES – SOME CHALLENGES

## SUSITNA VALLEY PROJECTS

- Recent interest in wood fiber for power generation in the Asian markets, Japan a potential big customer
- Several companies have expressed an interest in wood resources in the region and northward into the Interior
- Wood fiber for power generation is popular due to low CO<sub>2</sub> emission impacts, viewed as carbon neutral fuel source (EU market example)
- Wood supply must be certified sustainable – this requires third-party certification (Forest Stewardship Council (FSC) or Sustainable Forest Initiative (SFI) certifying bodies)

# FOREST CERTIFICATION PROCESS AND COSTS

## SFI EXAMPLE – SOUTHEAST STATE FOREST

- Dedicated land base with current forest inventory and management plan
- Phase I
  - Review SFI standard including document templates for evidence manual development
  - Third party consultant works with DOF to develop documents and procedures for preparation for an audit
  - Accredited Certification Body conducts third-party audit to the SFI Forest Management Standard
  - Close any gaps in the audit and complete the process
  - \$19,000 plus travel expenses – Partner Program will cover ~ \$9,375 in cost
- Phase II
  - Once certified, there is an ongoing annual audit process and fees to maintain certification
  - \$14,000 plus travel expenses
- Benefits and Risks .... discussion

# ACCESS DEVELOPMENT SUCCESSES AND CHALLENGES

## VALLENAR ROAD PROJECT GRAVINA ISLAND

**Third Bridge Placement**



**Hauling Rock on Mainline**



# ACCESS DEVELOPMENT SUCCESSES AND CHALLENGES FORMER DOF ROADS OFFICE (LOST IN BUDGET CUTS)

## Roads Office Within DOF

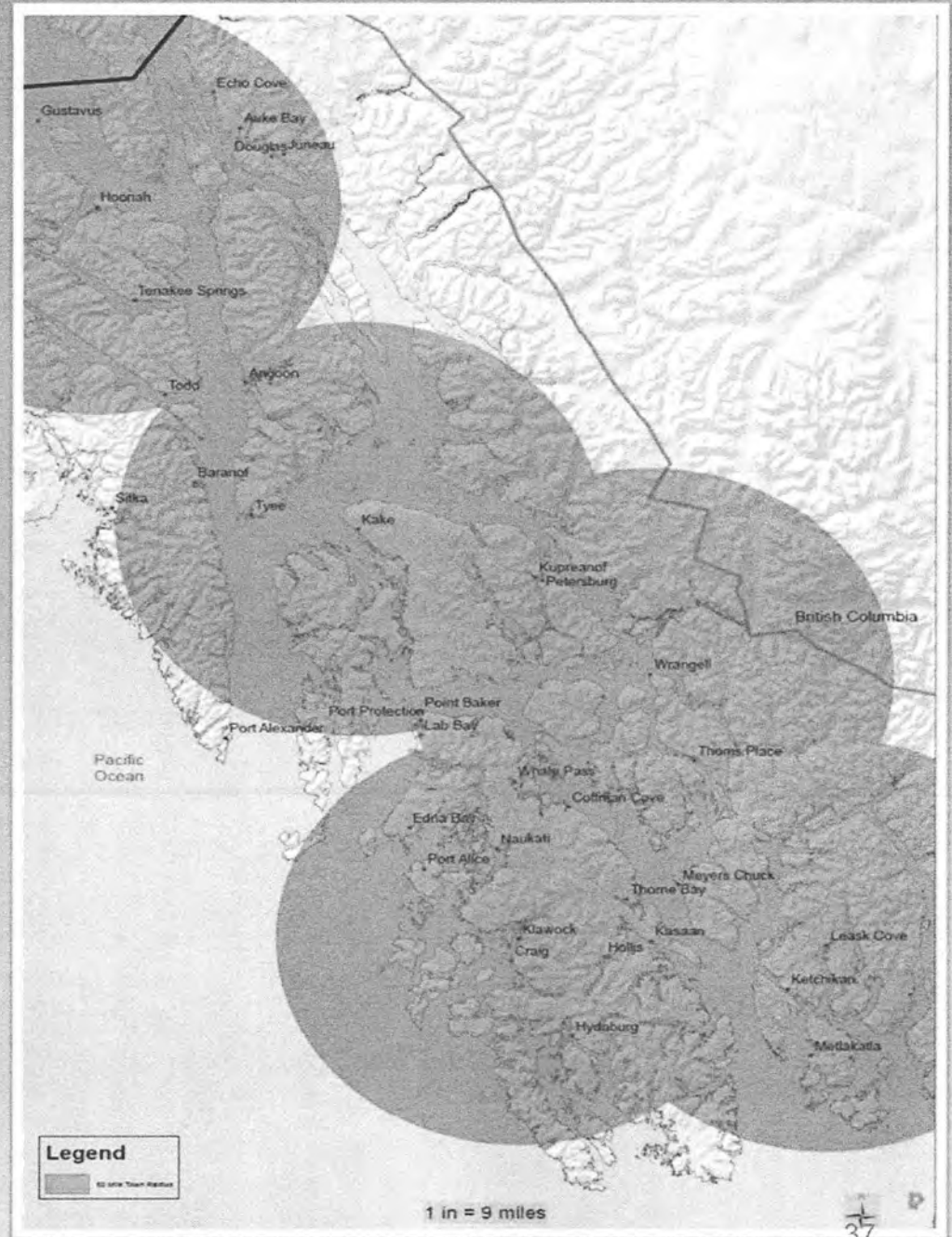
- Projects completed via Reimbursable Service Agreement (RSA) funding from DOT Roads to Resources:
  - Vallenar Road Access \$4.7MM
  - Bostwick Timber Access \$1.5MM
  - Shirley Towne Bridge \$317.0M
  - Willer-Kash Timber Access \$170.0M
  - Southeast Timber Access \$642.5M
    - Haines Bridge Porcupine Ck
    - Hollis Indian Creek

## Indian Creek Bridge



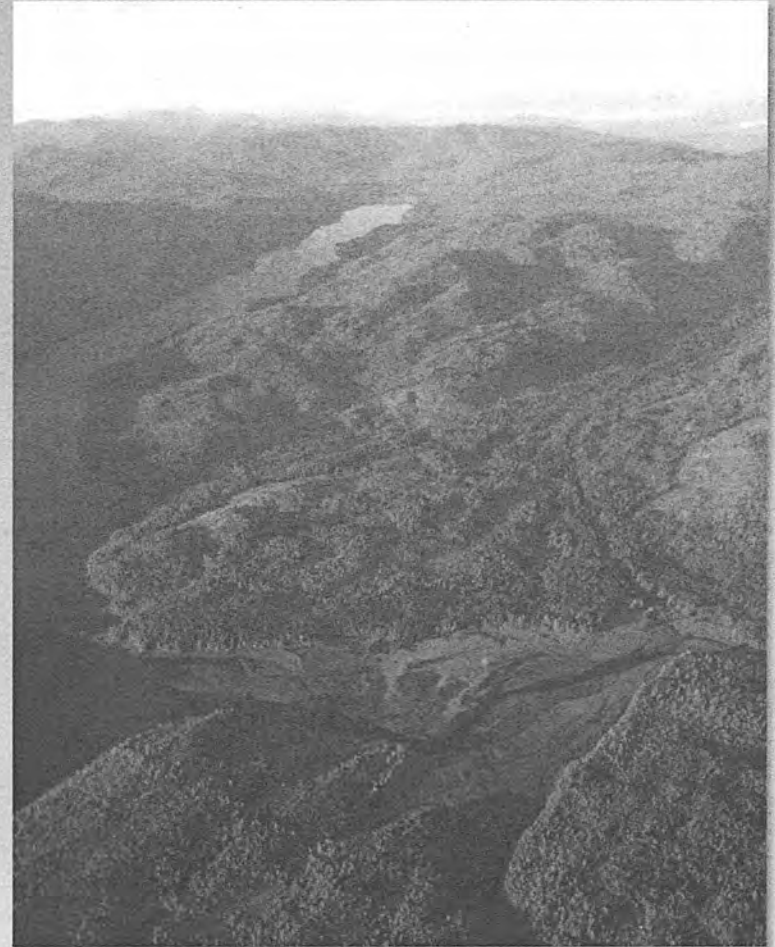
# WORKING CIRCLES INFRASTRUCTURE NEEDS

- Log Transfer Facilities (LTFs) in each working circle – serves as an appraisal point for federal timber sales
- Adding LTFs to Southeast State Forest
  - Edna Bay
  - Leask Cove
- Road connections, bridges and other major transportation items



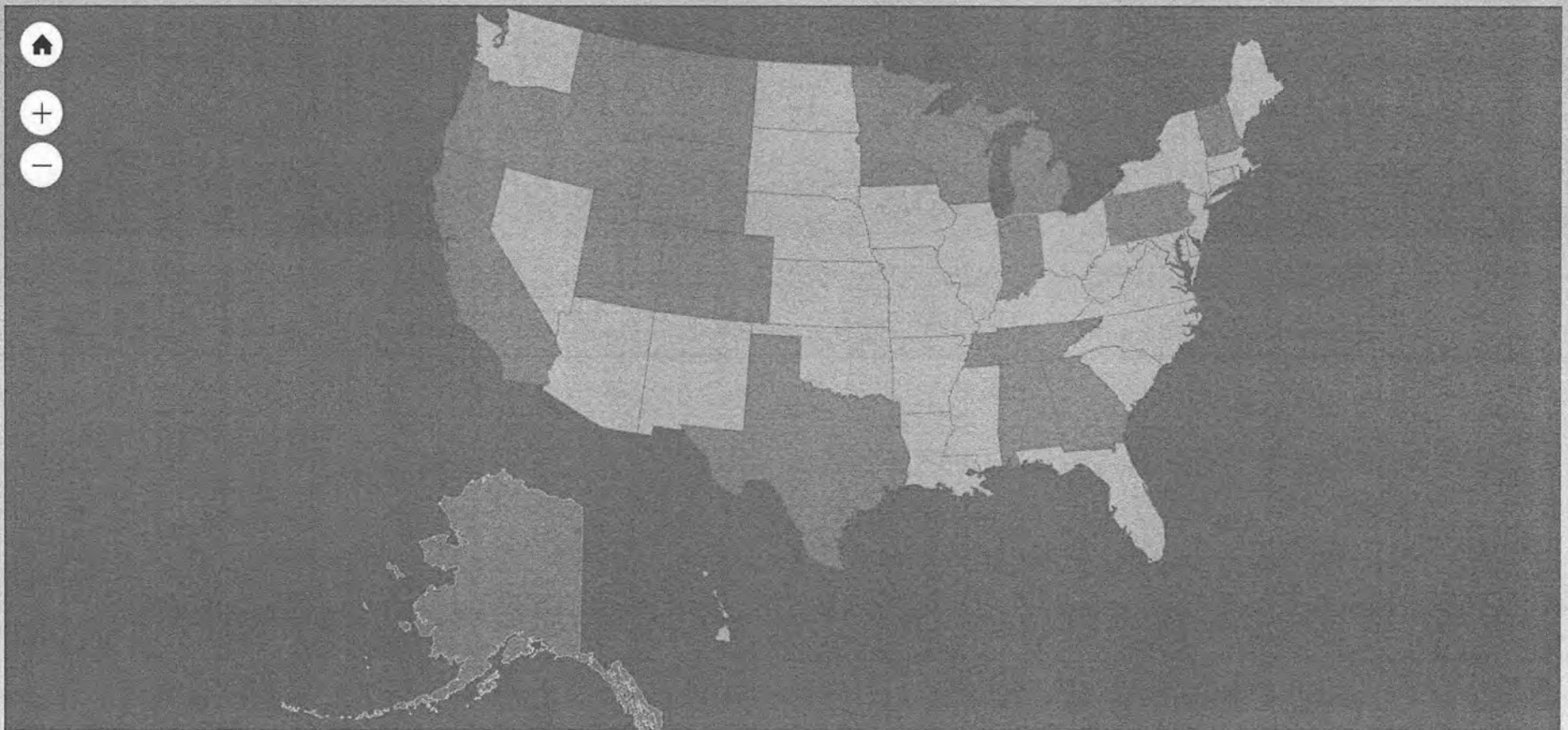
# GOOD NEIGHBOR AUTHORITY (GNA) PROJECTS

- Authorizes the Forest Service or Bureau of Land Management to enter into agreement with state foresters to carry out forest, rangeland, and watershed restoration, management and protection services
- Projects on Forest Service lands may include commercial timber harvesting or other mechanical vegetative treatments



# NATIONWIDE GNA STATUS

As of July 2016 the Forest Service had entered into 23 GNA agreements with 19 states.



# ALASKA'S FIRST GNA SUPPLEMENTAL PROJECT AGREEMENT (SPA) - KOSCIUSKO ISLAND -

- State has completed the cruise, appraisal, and administering of the contract
- State sold the 29 MMBF sale for double the appraised value \$2.8MM in September
- Two more SPAs planned in 2018:
  - Gravina Island young growth (YG) Sale
  - Heceta Island Salvage YG Sale
- Questions and Discussion





**BUREAU OF BUSINESS AND  
ECONOMIC RESEARCH**  
UNIVERSITY OF MONTANA

## **Alaska's Forest Products Industry and Timber Harvest, 2015**

The University of Montana's Bureau of Business and Economic Research (BBER), in conjunction with the Pacific Northwest Forest Inventory and Analysis (PNW-FIA) Program of the US Forest Service, conducted a census of Alaska's timber processors operating during calendar year 2015. Through a written questionnaire, phone, or in-person interview, timber-processing and residue-utilizing facilities provided information about their 2015 operations, including:

- Plant location, production, capacity, and employment
- Volume of raw material received, by county and ownership
- Species of timber received and live/dead proportions
- Finished product volumes, types, sales value, and market locations
- Volume, utilization, and marketing of manufacturing residue

Facility-level information was compiled, coded, analyzed and summarized. Because this study is based on a census, rather than statistical sample of firms, there is no statistical error associated with the estimates presented. Possibilities of reporting and measurement error exist, but are minimized by checking each facility's data for internal consistency and cross-checking summarized data against other public and private information. Summary data tables and figures are reviewed by wood products researchers, state and federal agency personnel, and members of the state's forest products industry to garner high-level reviews.

Some firms choose not to participate or do not provide complete data. Data for facilities that did not respond were estimated using previous years' surveys, data from similar facilities, and other information. For the 2015 Alaska census, data were received for 51 of the 60 active, in-state facilities. While some of the collected facility data required estimation methods to finalize, 80 percent of the harvest volume in 2015 was captured through quantitative methods. The resulting facility-level information was then compiled and summarized as presented here. A glossary is also included to provide additional context and clarity for terminology used in the data tables and subsequent reporting.

In addition to data collected through BBER survey efforts, publicly available data sources were leveraged to help reconcile and estimate total harvest volumes. USDA Forest Service Cut and Sold Reports provided context for national forest harvest levels. USDA Forest Service 2015 export permits as well as United States International Trade Commission (USITC) export data provided information on export volume, species, value, ownership and destination in 2015. Additional harvest and export information from lands under state ownership were received through personal correspondence with the State of Alaska Division of Forestry.

A series of research briefs/bulletins are currently being prepared that will include selected tables along with historical information and current industry trends. All BBER reports on Alaska's forest products industry can be found at: [http://www.bber.umt.edu/FIR/S\\_AK.asp](http://www.bber.umt.edu/FIR/S_AK.asp)

As we continue to finalize the reports, we would like to provide this "core" information to our data users and other interested individuals. We encourage you to contact us if you have any additional questions about the data. However, firm-level data are confidential and will not be released.

The lead analyst on this report is:

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## Highlights

- Alaska's statewide timber harvest in 2015 was estimated at 136.4 million board feet (MMBF) Scribner, down from 175.3 MMBF in 2011. Private lands supplied the majority of the harvest at 67 percent, a decrease from nearly 73 percent in 2011. Conversely, public ownerships have increased as a proportion of the harvest, with USFS timber harvest accounting for about 22 percent in 2015, compared with little more than 16 percent in 2011.
- Sitka spruce was the leading species harvested, accounting for 70 percent of the total harvest volume, and was also the major export species in 2015. Western hemlock and western redcedar each accounted for roughly 10 percent of the overall harvest. Sawlogs were the main product harvested, accounting for nearly 94 percent of the total harvest, and Southeast boroughs/census areas contributed nearly 60 percent of this volume. By comparison, Southeast boroughs accounted for more than 80 percent of the sawlog volume harvested in 2011.
- Though 'other' timber products including tonewood (wood used to make musical instruments) and cedar products combined only accounted for 1 percent of the total harvest in 2015, this represented a substantial increase (nearly four times) over the volume in 2011.
- Alaska log exports decreased dramatically between 2011 and 2015, falling approximately 42 percent. Alaskan log exports reached a decadal high (2005 to 2015) in 2012, but began decreasing in 2013 – falling by 28 percent in 2014, and by an additional 20 percent in 2015.
- Nearly all 2015 Alaskan log exports were sent to Pacific Rim countries in Northeast Asia, with China receiving approximately 76 percent of the volume leaving the Anchorage Customs District. Japan accounted for 16 percent and Korea an additional 7 percent of the exported log volume. Exports to all three of these countries have decreased between 2011 and 2015 by an average of more than 50 percent.
- A total of 60 primary wood products facilities were identified as active in Alaska during 2015:
  - 39 sawmills
  - 11 log home manufacturers
  - 10 other primary facilities that produced other products including fuelwood/energy products, cedar products and tonewood.
- Although the number of active Alaska facilities decreased from 2011, 6 new facilities were identified and one sawmill became active again in 2015. Approximately 14 facilities active in 2011 were idle and not operating during 2015, while 10 active 2011 facilities have since closed.

- Private and Native Corporation owned lands provided about 9 percent (2.8 MMBF Scribner) of the timber processed by Alaska facilities in 2015. About 37 percent (11.6 MMBF) of utilized volume came from state and other public lands. National forest lands accounted for 54 percent (16.9 MMBF) of timber received by Alaska facilities.
- Western redcedar was the most common species received by Alaska facilities, accounting for 35 percent of all products – an increase of nearly 10 percent over 2011—and accounting for approximately 42 percent of the sawlog volume. Western hemlock only accounted for 5 percent of timber volume received by facilities in 2015, less than half the proportion it represented in 2011.
- Despite declining harvest levels Alaska’s 39 sawmills received more timber in 2015 and produced just over 30 MMBF of lumber, nearly 50 percent more than in 2011. Alaska sawmills recovered an average of 1.33 board feet lumber tally per board foot Scribner of log input, a 12 percent increase over 2011. State-wide house log production fell by more than 15 percent from 2011 to 2015, while fuelwood products (firewood and wood pellets) increased by 12 percent.
- Self-reported production capacity fell statewide alongside the reduction in active Alaskan primary processing facilities. Lumber production capacity fell by 9 percent from 2011 to 2015 while house log production capacity fell by 52 percent. Interior Alaska saw the most dramatic drop in house log production capacity, falling by 77 percent since 2011. Annual timber-processing capacity of active facilities in the combined sawmill and houselog sectors fell by 8.5 percent since 2011, to 121.4 MMBF Scribner. Although overall production capacity fell, capacity utilization in Alaska’s sawmill and house log sectors increased to over 20 percent in 2015, close to the 2005 utilization levels.
- Total residue volume produced in 2015 increased over reported 2011 volumes, alongside increasing lumber production. A general increase in facilities reporting “other uses” of residues – animal bedding, mulch, landscape material – was observed in 2015. The proportion of residue used for fuelwood dropped slightly between 2011 and 2015, likely linked to the impact of lower fuel oil and natural gas prices, and facilities have found alternative uses for mill residuals.
- Alaska’s primary forest products industry shipped products valued at \$23.3 million (free on board [f.o.b.] the producing mill) in 2015, an increase of 28 percent from 2011, in constant 2015 dollars. The majority of primary products were sold within the state of Alaska. Residue sales – including firewood, garden mulch, animal bedding and landscaping fill – also increased to nearly \$4.9 million in 2015. Due to dramatic decreases in sawlog volume exported from Alaska, statewide total sales value for the forest products industry in 2015 was down nearly 20 percent from 2011 estimates.

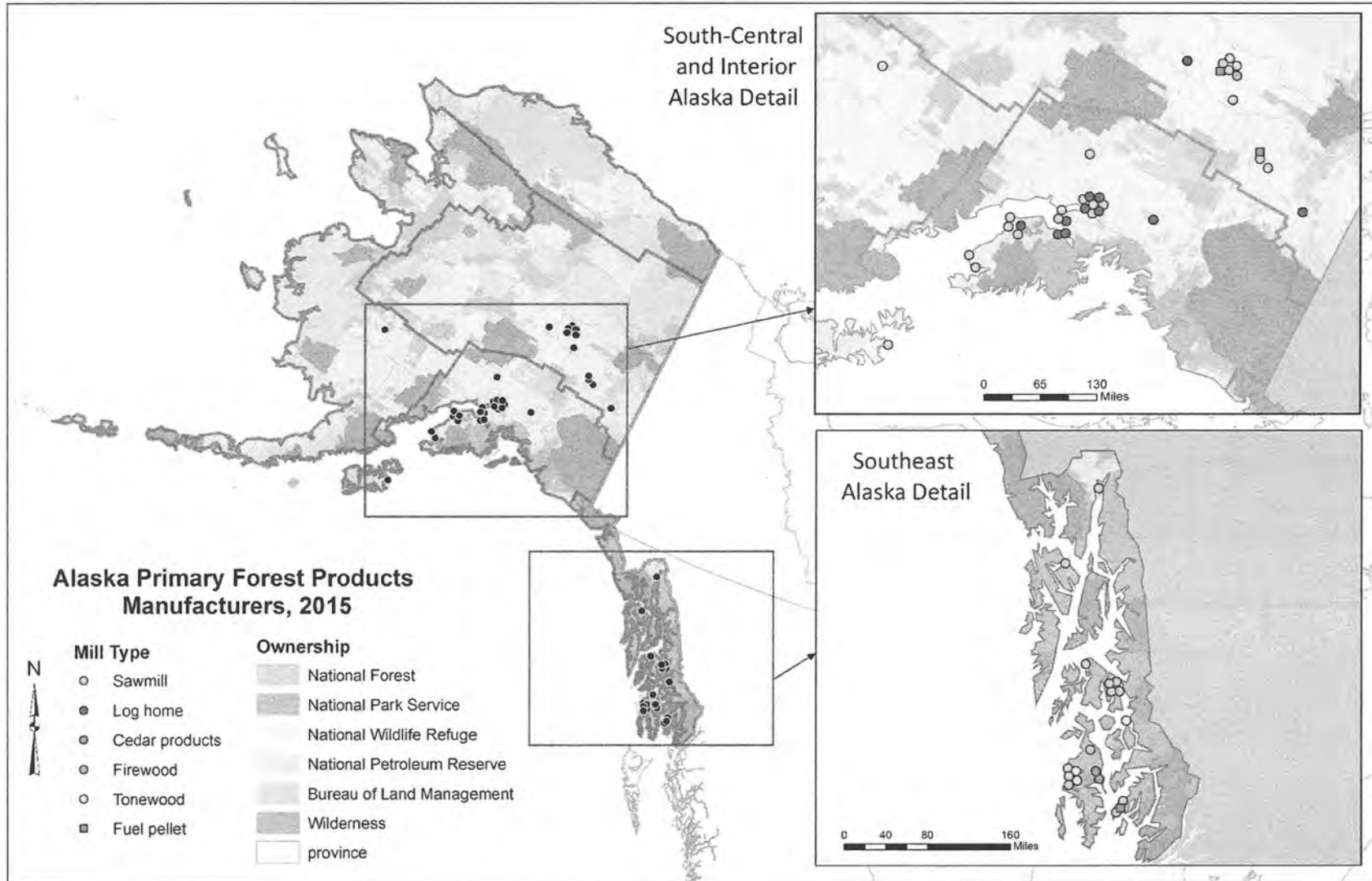


Figure 1 –Alaska’s primary wood processing facilities active during calendar year 2015.

**Table 1—Alaska timber harvest by ownership class and product type, 2015**

Ownership class	Sawlogs	House	Fuelwood	Other	All products	2011 All products
		logs		products <sup>a</sup>		
<i>Thousand board feet, Scribner</i>						
Private – including Native corporations	89,244	281	823	501	90,848	127,990
National Forest	28,961	194	60	1,071	30,286	28,688
State and other public	9,556	846	4,835	–	15,237	18,590
<b>All owners</b>	<b>127,761</b>	<b>1,321</b>	<b>5,718</b>	<b>1,572</b>	<b>136,371</b>	<b>175,267</b>
<i>Percent of harvest</i>						
Private – including Native corporations	69.9	21.2	14.4	31.9	66.6	73.0
National Forest	22.7	14.7	1.0	68.1	22.2	16.4
State and other public	7.5	64.1	84.6	–	11.2	10.6
<b>All owners<sup>b</sup></b>	<b>93.7</b>	<b>1.0</b>	<b>4.2</b>	<b>1.2</b>	<b>100</b>	<b>100</b>

<sup>a</sup> Other timber products include tonewood and cedar products.

<sup>b</sup> Total may not add to 100% due to rounding.

**Table 2—Alaska timber harvest by species and product type, 2015**

Species	Sawlogs	Other	All products	2011 All products
		products <sup>ab</sup>		
<i>Thousand board feet, Scribner</i>				
Sitka spruce	96,115	279	96,393	111,364
Western hemlock	14,594	117	14,711	35,159
Western redcedar	12,186	1,294	13,483	18,362
White Spruce	2,530	5,196	7,726	6,173
Birch species	734	1,280	2,014	1,660
Alaska-yellow cedar	1,425	247	1,671	1,786
Other <sup>c</sup>	174	198	373	762
<b>All species</b>	<b>127,761</b>	<b>8,610</b>	<b>136,371</b>	<b>175,267</b>
<i>Percent of harvest</i>				
Sitka spruce	75.2	3.2	70.7	63.5
Western hemlock	11.4	1.4	10.8	20.1
Western redcedar	9.5	15.0	9.9	10.5
White Spruce	2.0	60.3	5.7	3.5
Birch species	0.6	14.9	1.5	0.9
Alaska-yellow cedar	1.1	2.9	1.2	1.0
Other <sup>c</sup>	0.1	2.3	0.3	0.4
<b>All species<sup>d</sup></b>	<b>93.7</b>	<b>6.3</b>	<b>100</b>	<b>100.0</b>

<sup>a</sup> Other products include houselogs, fuelwood logs, cedar product logs, and tonewood.

<sup>b</sup> Products by species were combined to prevent disclosure.

<sup>c</sup> Other species include cottonwood, quaking aspen, black spruce, poplar and red alder.

<sup>d</sup> Total may not add to 100% due to rounding.

**Table 3—Alaska timber harvest by resource area, 2015**

Resource area	Harvest Volume	Percentage of total
	<i>Thousand board feet, Scribner</i>	
Interior	7,863	5.8
Southcentral & Western <sup>a</sup>	52,547	38.5
Southeast	75,961	55.7
<b>State total</b>	<b>136,371</b>	<b>100</b>

<sup>a</sup> Resource areas combined to avoid disclosure.

**Table 3 - reference for resource area**

**Alaska timber resource and borough/census areas**

**Resource area**

**Interior:**

- Fairbanks North Star Borough
- Denali Borough
- Yukon-Koyukuk
- Southeast Fairbanks Census Area

**Southcentral:**

- Anchorage Borough
- Kenai Peninsula Borough
- Matanuska-Susitna Borough
- Valdez-Cordova Census Area

**Southeast:**

- Haines Borough
- Juneau Borough
- Ketchikan Gateway Borough
- Prince of Wales-Outer Ketchikan Census Area
- Sitka Borough
- Skagway-Hoonah-Angoon Census Area
- Wrangell-Petersburg Census Area
- Yakutat Borough

**Western:**

- Bethel Census Area
- Kodiak Island Borough

**Table 4—Timber volume received by Alaska facilities by ownership class and product type, 2015**

Ownership class	Sawlogs <sup>a</sup>	House logs	Fuelwood <sup>b</sup>	Other products <sup>c</sup>	2015 – all products	2011 – all products <sup>d</sup>	2005 – all products <sup>e</sup>
Private – including native corporation	1,244	281	823	501	2,848	3,364	3,743
National Forest	15,545	194	60	1,071	16,870	12,099	23,866
State & other public	5,880	846	4,835	–	11,561	7,796	17,252
<b>All owners</b>	<b>22,669</b>	<b>1,321</b>	<b>5,718</b>	<b>1,572</b>	<b>31,280</b>	<b>23,259</b>	<b>44,861</b>
<i>Percentage of volume received</i>							
Private – including native corporation	5.5	21.2	14.4	31.9	9.1	14.5	8.3
National Forest	68.6	14.7	1.0	68.1	53.9	52.0	53.2
State & other public	25.9	64.1	84.6	–	37.0	33.5	38.5
<b>All owners<sup>f</sup></b>	<b>72.5</b>	<b>4.2</b>	<b>18.3</b>	<b>5.0</b>	<b>100</b>	<b>100</b>	<b>100</b>

<sup>a</sup> Timber exports not included.

<sup>b</sup> Includes timber used for residential firewood, industrial fuelwood for pellet manufacturing and chips for park/playground fill.

<sup>c</sup> Includes cedar product and tonewood logs.

<sup>d</sup> From Berg et al. (2014).

<sup>e</sup> From Halbrook et al. (2009).

<sup>f</sup> Total may not add to 100% due to rounding.

**Table 5—Timber volume received by Alaska facilities by species and product type, 2015**

Species	Sawlogs <sup>a</sup>	House logs	Fuelwood <sup>b</sup>	Other products <sup>c</sup>	2015 – all products	2011 – all products <sup>d</sup>	2005 – all products <sup>e</sup>
Western redcedar	9,597	28	12	1,255	10,891	5,671	1,857
White spruce	2,530	942	4,254	–	7,726	6,174	6,154
Sitka spruce	7,443	180	28	71	7,722	5,114	10,877
Birch species	734	48	1,232	0	2,014	1,660	230
Western hemlock	1,579	44	23	50	1,696	3,114	23,539
Alaska yellow-cedar	612	57	7	183	858	373	1,099
Other <sup>f</sup>	174	22	162	15	373	1,153	1,105
<b>All species</b>	<b>22,669</b>	<b>1,321</b>	<b>5,718</b>	<b>1,572</b>	<b>31,280</b>	<b>23,259</b>	<b>44,861</b>
<i>Percent of volume received</i>							
Western redcedar	42.3	2.1	0.2	79.8	34.8	24.4	4.1
White spruce	11.2	71.3	74.4	–	24.7	26.5	13.7
Sitka spruce	32.8	13.6	0.5	4.5	24.7	22.0	24.2
Birch species	3.2	3.6	21.5	0.0	6.4	7.1	0.5
Western hemlock	7.0	3.3	0.4	3.2	5.4	13.4	52.5
Alaska yellow-cedar	2.7	4.3	0.1	11.6	2.7	1.6	2.4
Other <sup>f</sup>	0.8	1.6	2.8	0.9	1.2	5.0	2.5
<b>All species<sup>g</sup></b>	<b>72.5</b>	<b>4.2</b>	<b>18.3</b>	<b>5.0</b>	<b>100</b>	<b>100</b>	<b>100</b>

<sup>a</sup> Timber exports not included.

<sup>b</sup> Includes timber used for residential firewood, industrial fuelwood for pellet manufacturing and chips for park/playground fill.

<sup>c</sup> Includes cedar products and tonewood logs.

<sup>d</sup> From Berg et al. (2014).

<sup>e</sup> From Halbrook et al. (2009).

<sup>f</sup> Species combined to avoid disclosure. Other species include cottonwoods, Balsam poplar, quaking aspen, red alder, and black spruce.

<sup>g</sup> Total may not add to 100% due to rounding.

**Table 6—Timber volume received by Alaska facilities by resource area and product type, 2015**

Resource Area	Sawlogs <sup>a</sup>	House	Fuelwood <sup>b</sup>	Other	2015 –	2011 –	2005 –
		logs		products <sup>c</sup>	all products	all products <sup>d</sup>	all products <sup>e</sup>
<i>Thousand board feet, Scribner</i>							
Southeast	19,071	166	60	1,572	20,869	13,812	37,982
Southcentral & Western <sup>f</sup>	1,061	634	853	0	2,547	3,022	2,900
Interior	2,538	520	4,805	0	7,863	6,425	3,729
<b>All areas</b>	<b>22,669</b>	<b>1,321</b>	<b>5,718</b>	<b>1,572</b>	<b>31,280</b>	<b>23,259</b>	<b>44,861<sup>g</sup></b>
<i>Percent of volume received</i>							
Southeast	84.1	12.6	1.0	100.0	66.7	59.4	84.7
Southcentral & Western <sup>f</sup>	4.7	48.0	14.9	0.0	8.1	13.0	6.5
Interior	11.2	39.4	84.0	0.0	25.1	27.6	8.3
<b>All areas<sup>h</sup></b>	<b>72.5</b>	<b>4.2</b>	<b>18.3</b>	<b>5.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

<sup>a</sup> Timber exports not included.

<sup>b</sup> Includes timber used for residential firewood, industrial fuelwood for pellet manufacturing and chips for park/playground fill.

<sup>c</sup> Includes cedar products and tonewood logs.

<sup>d</sup> From Berg et al. (2014).

<sup>e</sup> From Halbrook et al. (2009).

<sup>f</sup> Resource areas combined to avoid disclosure.

<sup>g</sup> Includes 250 MBF from outside the state of Alaska (Halbrook et al. 2009).

<sup>h</sup> Total may not add to 100% due to rounding.

**Table 7—Alaska lumber, house log, fuelwood, and other product production by resource area, 2015**

Resource area	Lumber and other	House logs	Fuelwood	Other Products <sup>c</sup>
	sawn products <sup>a</sup>		Products <sup>b</sup>	
<i>Thousand board feet, lumber tally</i>				
Southeast	25,122	68	724	1,604
Southcentral & Western <sup>e</sup>	1,315	137	1,854	–
Interior	4,752	113	12,390	–
<b>All areas</b>	<b>31,189</b>	<b>318</b>	<b>14,969</b>	<b>1,604</b>

<sup>a</sup> Includes all sawn products, regardless of facility type.

<sup>b</sup> Includes firewood, wood pellets, and wood chips for recreational uses.

<sup>c</sup> Includes cedar products and tonewood.

<sup>d</sup> Bone-dry unit (BDU) = 2,400 pounds of oven-dry wood.

<sup>e</sup> Resource areas combined to avoid disclosure.

**Table 8—Number of active timber-processing facilities by borough/census area and product produced, 2015<sup>a</sup>**

Borough/census area	Lumber	House logs	Other <sup>b</sup>	Total
Anchorage Borough	1	3	—	4
Bethel Census Area	1	—	—	1
Fairbanks North Star Borough	5	—	2	7
Haines Borough	2	—	—	2
Juneau Borough	—	—	—	—
Kenai Peninsula Borough	5	2	—	7
Ketchikan Gateway Borough	2	—	—	2
Kodiak Island Borough	1	—	—	1
Matanuska-Susitna Borough	6	4	—	10
Prince of Wales-Outer Ketchikan Census Area	7	—	6	13
Skagway-Hoonah-Angoon Census Area	2	—	—	2
Southeast Fairbanks Census Area	2	1	1	4
Wrangell-Petersburg Census Area	5	—	1	6
Yukon-Koyukuk	—	1	—	1
<b>2015 State total</b>	<b>39</b>	<b>11</b>	<b>10</b>	<b>60</b>
2011 State total <sup>c</sup>	50	18	9	77
2005 State total <sup>d</sup>	50	20	8	78

<sup>a</sup> Does not include timber exporters.

<sup>b</sup> Other facilities include producers of fuelwood, wood pellets, cedar products, and tonewood.

<sup>c</sup> From Berg et al. (2014).

<sup>d</sup> From Halbrook et al. (2009).

**Table 9—Alaska annual lumber production and average overrun by sawmill size, 2015**

Annual lumber production size class	Number of sawmills	2015 lumber production <sup>a</sup> MBF <sup>b</sup>	Percentage of total	Average overrun
< 150 MBF lumber tally	31	1,516	5	1.04
150 to 500 MBF lumber tally	3	1,013	3	1.17
> 500 MBF lumber tally	5	28,190	92	1.36
<b>2015 State Total</b>	<b>39</b>	<b>30,719</b>	<b>100</b>	<b>1.33</b>
2011 State Total <sup>c</sup>	50	20,558		1.19
2005 State Total <sup>d</sup>	50	54,861		1.27

<sup>a</sup> Includes only sawn products from saw mills, does not include sawn products from the house log sector.

<sup>b</sup> Thousand board feet, lumber tally.

<sup>c</sup> From Berg et al. (2014).

<sup>d</sup> From Halbrook et al. (2009).

**Table 10—Alaska production capacity<sup>a</sup> by resource area and sector, 2015**

Resource area <sup>b</sup>	Lumber production capacity	House log production capacity
	MBF, lumber tally	Thousand lineal feet
Southeast	98,255	210
Southcentral & Western <sup>c</sup>	6,787	417
Interior	19,298	200
<b>2015- all resource areas</b>	<b>124,340</b>	<b>827</b>
2011- all resource areas <sup>d</sup>	137,331	1,740
2005- all resource areas <sup>e</sup>	240,159	2,603

<sup>a</sup> Includes only facilities active during 2015.

<sup>b</sup> See Table 3 for a list of borough/census areas located within resource areas.

<sup>c</sup> Resource areas combined to avoid disclosure.

<sup>d</sup> From Berg et al. (2014).

<sup>e</sup> From Halbrook et al. (2009).

**Table 11—Alaska annual timber-processing capacity<sup>a</sup> and use by size class and sector, 2015**

Annual timber-processing capacity size class	Number of active facilities	Annual timber processing capacity		2015 Timber use	
		Timber-processing capacity	Sector capacity	Volume processed	Capacity utilization within size class
MBF <sup>b</sup>		MBF <sup>b</sup>	Percent	MBF <sup>b</sup>	Percent
<b>Sawmill sector</b>					
< 250 MBF	17	2,380	2.4	827	34.7
251-500 MBF	5	1,818	1.9	303	16.7
501-1000 MBF	7	5,886	6.0	1,127	19.1
>1000 MBF	10	87,602	89.7	20,780	23.7
<b>Sawmill sector total</b>	<b>39</b>	<b>97,686</b>	<b>100</b>	<b>23,037</b>	<b>23.6</b>
<b>House log &amp; other<sup>c</sup> sectors</b>	<b>18</b>	<b>23,708</b>	<b>100</b>	<b>1,652</b>	<b>7.0</b>
<b>2015 combined sector totals</b>	<b>57</b>	<b>121,394</b>		<b>24,689</b>	<b>20.3</b>
2011 combined sector totals <sup>d</sup>	77	132,794		20,741	15.6
2005 combined sector totals <sup>e</sup>	77	202,156		46,131	21.4

<sup>a</sup> Includes facilities active during 2015 only. Does not include timber exporters.

<sup>b</sup> Thousand board feet, Scribner

<sup>c</sup> Other sectors include cedar products, tonewood and firewood (excluding pellet plants) manufacturers.

<sup>d</sup> From Berg et al. (2014).

<sup>e</sup> From Halbrook et al. (2009).

**Table 12—Alaska sawmill<sup>a</sup> residue factors, 2015**

Type of residue	BDU <sup>b</sup> per MBF lumber tally
Coarse	0.60
Sawdust	0.17
Planer shavings	0.09 <sup>c</sup>
Bark	0.17
<b>Total</b>	<b>0.95</b>

<sup>a</sup> Includes saw mills producing only lumber and no other products.

<sup>b</sup> Bone-dry unit (BDU = 2,400 lb of oven-dry wood) of residue generated for every 1,000 board feet of lumber manufactured.

<sup>c</sup> This factor represents only the few pristine Alaskan saw mills that planed lumber. The combined planer shavings factor was <0.001 for all saw mills which only produced lumber, whether or not the mills reported planer shavings.

**Table 13—Production and disposition of mill residue from Alaska's forest products industry, 2015**

Type of residue	Residue disposition			Unused	Total
	Pulp chips	Fuelwood <sup>a</sup>	Other uses <sup>b</sup>		
	-----Bone-dry units <sup>c</sup> -----				
Coarse <sup>d</sup>	13,886	4,851	1,067	1,453	21,256
Sawdust	550	4,393	656	490	6,089
Shavings/peelings	--	171	1,126	192	1,490
Bark	--	3,615	1,346	1,127	6,088
<b>All residues</b>	<b>14,436</b>	<b>13,029</b>	<b>4,196</b>	<b>3,262</b>	<b>34,923</b>

<sup>a</sup> Fuelwood uses include fuel/firewood for heating and wood pellet production.

<sup>b</sup> Other uses primarily include animal bedding, mulch, and landscape material.

<sup>c</sup> Bone-dry unit (BDU) = 2,400 pounds of oven dry wood.

<sup>d</sup> Coarse residue includes chips, edgings, slabs, cull sections of logs and log ends.

**Table 14—Destination and sales value of Alaska's primary wood products and sawmill residue, free on board (f.o.b.) the producing facility in 2015**

Product	Alaska	West Coast <sup>a</sup>	Other States	Pacific Rim	Canada	2015 Total
<i>—Thousands of 2015 dollars—</i>						
Lumber	5,897	4,708	633	891	38	12,167
Other <sup>b</sup>	9,531	723	454	250	190	11,147
<b>Total primary product</b>	<b>15,427</b>	<b>5,431</b>	<b>1,087</b>	<b>1,141</b>	<b>228</b>	<b>23,314</b>
Residues <sup>c</sup>						4,886 <sup>d</sup>
Sawlog and pulpwood exports <sup>d</sup>						86,207 <sup>e</sup>
<b>2015 Total sales value</b>						<b>114,407</b>
2011 Total sales value <sup>f</sup>						141,158
2005 Total sales value <sup>g</sup>						177,278

<sup>a</sup> West Coast states include California, Hawaii, Oregon, and Washington.

<sup>b</sup> Other products include house logs, firewood, wood pellets, cedar products and tonewood.

<sup>c</sup> Residue products include firewood, garden mulch, animal bedding and wood chips for park/playground fill and landscaping.

<sup>d</sup> United States International Trade Commission (USITC) Dataweb tool.

<sup>e</sup> Data pooled across destinations to prevent disclosure of confidential information.

<sup>f</sup> From Berg et al. (2014).

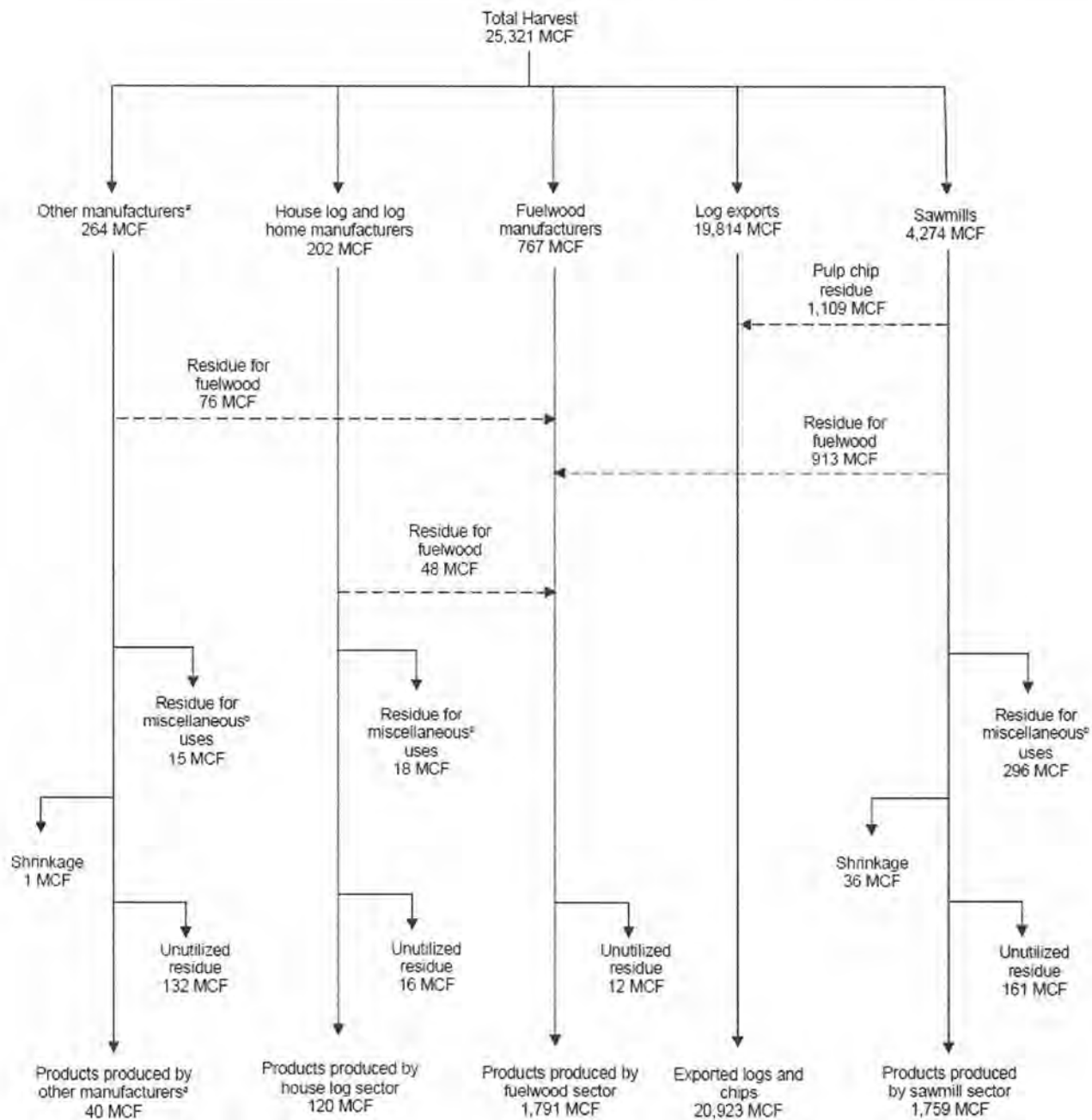
<sup>g</sup> From Halbrook et al. (2009).

Figure 2 (below) traces the flow of wood fiber inputs and outputs in Alaska's primary timber industry by sector, demonstrating the utilization of Alaska's timber harvest in cubic feet for 2015. By converting all facility inputs from board feet Scribner to cubic feet, inputs are measured in the same units as outputs – thus accounting for both mill residues and timber products. This allows the wood fiber from different sectors of the industry, which usually express outputs in different units, to be analyzed collectively. The following conversion factors, converting Scribner board foot volume to cubic feet (BFCF), were developed from log size specifications, as well as product and residue recovery information, provided by processors of Alaska's 2015 timber harvest:

- 6.54 board feet per cubic foot for house logs
- 6.20 board feet per cubic foot for other products
- 5.30 board feet per cubic foot for sawlogs, including exports
- 3.06 for fuelwood products

These board-foot-to-cubic-foot (BFCF) ratios have changed through time as a result of changes in product recovery and residue production.

Use of Alaska's 2015 timber harvest in thousand cubic feet (MCF), excluding bark.



<sup>a</sup> Other manufacturers include manufacturers of tonewood and cedar products.

<sup>b</sup> Miscellaneous uses include landscape, mulch, and animal bedding.

Figure 2 – Utilization of Alaska's timber harvest, 2015.

## Glossary

**Board foot** – A unit of measure applied to lumber that is 1-ft long, 1-ft wide and 1-in thick (or its equivalent) and also associated with roundwood as to its potential yield of such products.

**Board foot to Cubic foot ratio (BFCF)** – BBER developed conversion factors for each timber processing sector (by state) to convert Scribner board foot volume to cubic foot using the methods outlined in Keegan et al. (2011). Ratios have changed through time as a result of changes in product recovery, residue production, and shifts in log diameter size utilized. BFCF ratios accounted for both primary products and residue volumes.

**Bone dry unit (BDU)** – The amount of wood residue that weights 2,400 lbs (1,088 kg) at 0 percent moisture content. One BDU equals approximately 9.49 yd<sup>3</sup> or 96 ft<sup>3</sup> of solid wood.

**Cubic foot** – A unit of true volume that measures 1 ft by 1 ft by 1 ft (30.48 by 30.48 by 30.48 cm).

**Fuelwood** – Refers to wood used in the production of industrial heat and steam and residential firewood as well as wood pellet production. Pellets can be produced from mill residues (e.g., sawdust and shavings) as well as chipped roundwood.

**House log** – Roundwood timber used to construct log homes. Products manufactured from house logs can be sawn, scribed by hand, notched or milled by lathe to meet customer construction needs. House log timber is often dead (by choice, because “green” logs usually require drying before they can be used for construction) and of lower value than sawlogs.

**Lumber recovery factor (LFR)** – The volume of lumber recovered (in board feet) per cubic foot of log processed.

**Lumber tally** – The volume of sawn products, usually expressed in board feet.

**Overrun** – The volume of lumber actually obtained from a log in excess of the estimated volume of the log, based on log scale.

**Product recovery ratios** – Finished product volume divided by timber input volume (output in sector specific units per input in Scribner). For sawmills, expressed as MBF lumber tally/MBF log scale (Scribner in this report). Recovery ratios are used to assess recovery trends and in other useful calculations including board feet Scribner per cubic foot of logs processed. An expression of relative mill processing efficiency.

**Production capacity (owner reported)** – Potential ability of a facility to produce output per shift or 240-day work year, assuming one 8-hour shift per day, firm market demand for products, and sufficient supply of raw materials. For sawmills, expressed as thousand board feet lumber tally per shift or per year. Production capacity included in BBER reports is directly reported by facility owners or managers, as thousand board feet (MBF) lumber tally output per work year for sawmills and thousand lineal feet (MLF) of house log output per work year for log home manufacturers.

**Recovery** – The volume of output per unit of input, a measure of mill efficiency. Recovery factors (output in sector specific units per input in Scribner) are used to express the relationship between inputs

and outputs and are subsequently translated into cubic feet and used to estimate total cubic feet of log input recovered in product.

**Residue** – The wood-fiber or bark by-product of remaining after timber processing of a primary product like lumber, plywood, posts and poles, house logs, etc. Three types of residue are generally generated:

**Coarse** – chips, edgings, slabs, trim, mis-cuts, and log ends

**Fine** – sawdust and planer shavings

**Bark.**

**Residue volume factors** – for each industry sector, these factors express the average number of bone dry units (BDU) of residue of various types available per unit of product output.

**Sawlog** – A log that meets minimum regional standards of diameter, length, and defect, intended for sawing.

**Scaling** – Or “log scaling” is the measurement of volume in a log based on specific log rules, for example the Scribner log rule. In this report, all scaled volumes are reported in Scribner. Two versions of Scribner log scale are commonly used – west side and east side. Maximum log length is 40 ft for west-side Scribner and 20 ft for east-side scale.

**Scribner** – A diagram log rule originating in the 1800s that assumes 1-in (2.54 cm) boards and 0.25 in (0.64 cm) kerf, and is based on diameter at the small end of the log, disregards taper, and does not provide for overrun. Note: The Scribner rule underestimates lumber yield on small logs and long logs with taper.

**Timber-processing capacity** – The volume of timber reported in MBF Scribner that could be processed given sufficient supplies of raw materials and firm market demand for products. Timber-processing capacity is estimated for each facility by applying the product recovery ratios to production capacity. Essentially gauges the volume of timber facilities could use if they operated at their self-reported production capacity, and is expressed as MBF Scribner log scale of timber per shift or per work year. BBER computes a facility’s timber-processing capacity by dividing its production capacity by its product recovery ratio. Timber-processing capacity is generally expressed in MBF Scribner log scale, regardless of wood products manufacturing sector, and is therefore useful in characterizing the timber consumption potential of an entire state’s forest products industry.

**Tonewood** – Roundwood specifically processed (typically from large-diameter timber) for the production of musical instruments.