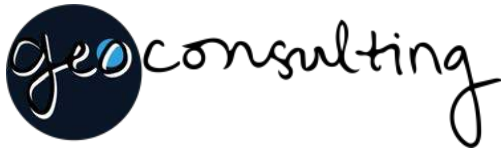


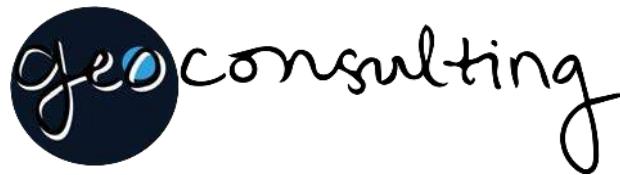
Young Growth Wood Products for a Sustainable Southeast Alaskan Economy

*Results of a Prince of Wales Young Growth
Wood Product Hub Initial Feasibility Project
& Small Mills Meeting*

Tongass Transition Collaborative (TTC) Meeting

May 3-4 2023







Fall '22 Interviews & Site Visits

*Shipping &
Communication*

*City
Administration*

*Workforce
Development*

*Small Sawmill
Operators*

*Tribal
Corporation &
Government*

Landowners

Collaborative: Three Action Items

- Goal 1: Realize the opportunity of young growth supply to retain the value generated by timber resources within POW's tribal and rural communities.
- Action 1: Adopt a WealthWorks value chain economic development approach to the YG opportunity.
- Goal 2: Increase processing capacity to produce young growth wood products for regional demand.
- Action 2: Value Chain Support Partners assist product development, contracting with regional market demand, and securing viable supply.
- Goal 3: Work together.
- Action 3: Support foundation of trust for collaboration – e.g., discussions bring noticeable outcomes, scholarships, facilitation of negotiations.



What is a Value Chain?

The goal is not simply delivering a product to market. It is doing so in ways that help build wealth that sticks to the region.



Individual



Intellectual



Social



Cultural



Natural



Built



Political

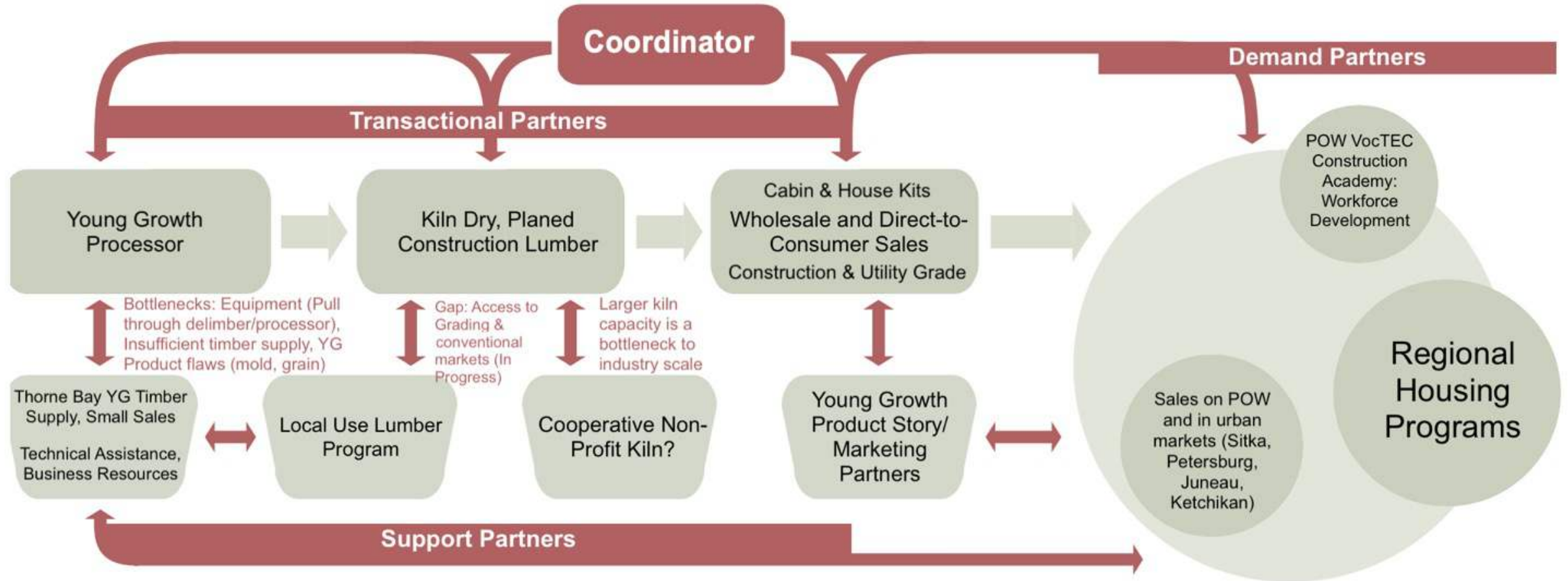


Financial

Value Chain Approach

- Tongass Transition
 - New Landscape, Costs, “Value Chain” vs. Business as Usual Supply Chain
- Tasks
 - Bring together and connect community assets to identify enterprising opportunities that meet market demand in a region
 - Engage a wide range of partners in turning those opportunities into results
 - Intentionally support local ownership and control of assets; value becomes built, captured, and rooted in local people, places and firms
- Outcomes
 - Advance a region’s prosperity and self-reliance
 - Strengthen existing and emerging sectors
 - Increase jobs and incomes for lower-income residents and firms

Early-Stage POW Wood Product Value Chain Development



Getting beyond chicken & egg...



POW Operators interested in YG Wood Products

- **JK Forest Products** - Jay and Josh Kohn, has a vision to expand processing capacity to produce kiln-dried and planed young growth lumber products for the local and regional market, currently at 130 MBF/year and growing to 250-1,000MBF/year.
- **Fair and Square Lumber** - Don Nicholson, has demonstrated young growth lumber in the POW market, and is a vocal advocate for Sitka spruce.
- **Caleb Toman** looks to Fair and Square Lumber as an example for operations and scale. He recently acquired a D&L portable sawmill and intends to produce young growth lumber for the local construction market around Whale Pass. Challenge sourcing supply without the ability to cut green trees through micro sales.

Prince of Wales Island

Young Growth Wood Product Value Chain Potential Partners

Legend

- Expanding Young Growth Processor
- Potential Demand Partner
- Young Growth Processor

Caleb Toman

Etolin Island

Fair and Square Lumber

Kosciusko Island

Coffman Cove

Edna Bay

Naukati Bay

Prince of Wales Island

JK Forest Products

Thorne Bay

Revillagigedo Island

Shaan Seet Inc.

Klawock

POW VocTEC

Kasaan

Craig

Hollis

Ward Cove

Ketchikan

Dairy

Hydaburg

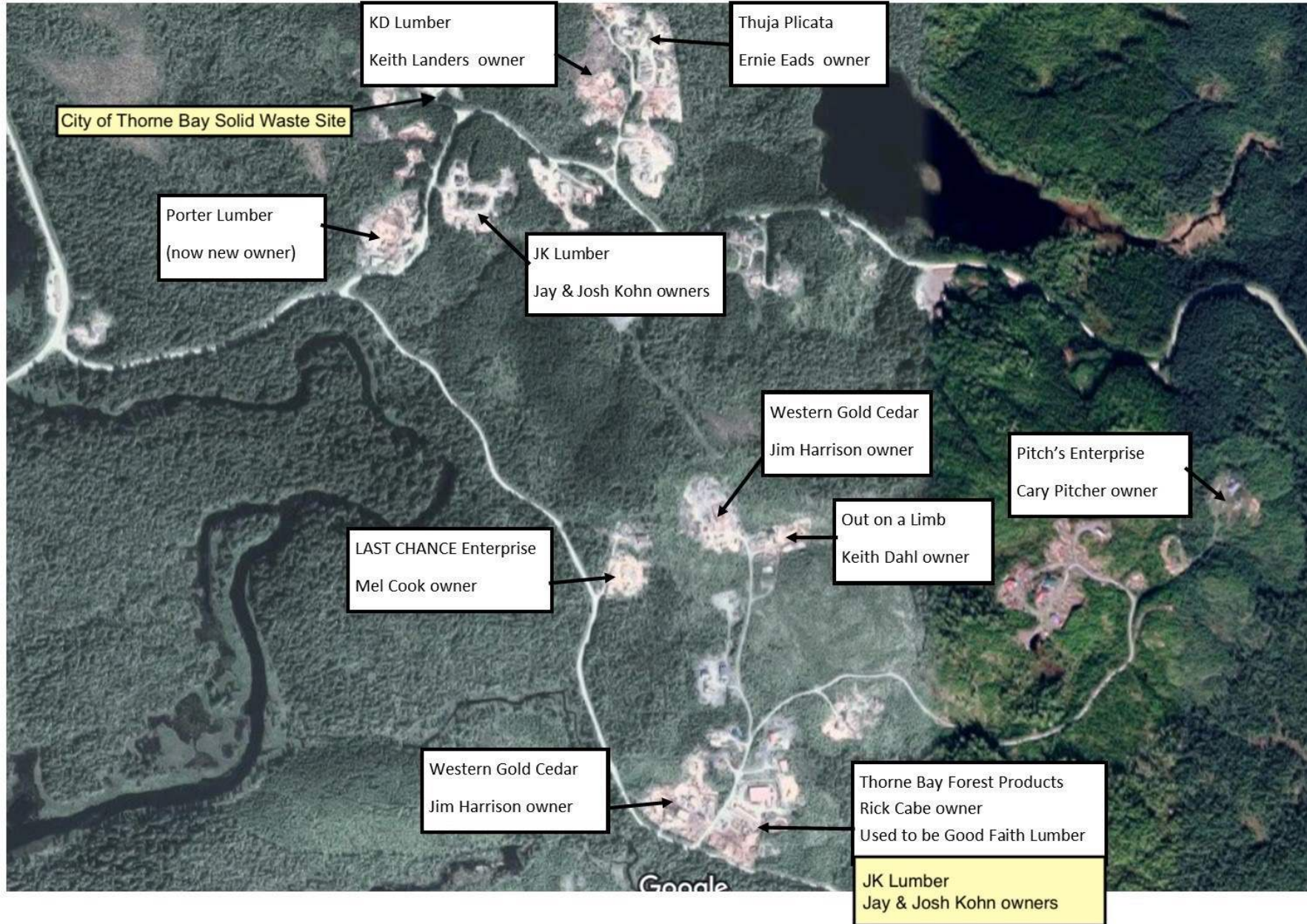
Google Earth

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus
Image IBCAO
Image © 2023 TerraMetrics



20 mi

GOOSE CREEK SUBDIVISION, THORNE BAY ALASKA





Wood Products

JK Lumber – Jay and Josh Kohn



- 2022 Eagle Creek and Boy Scout young growth sales, 188.5 MBF of spruce, 42.9 MBF hemlock, and 1.18 MBF cedar
- Mill Survey Capacity: 130 MBF/year
- Want to purchase 250 MBF/year young growth

Wood Products: Characteristics, Quality

- Sitka Spruce – Available Now
 - 16-24” diameter
 - Rough grain even after a kiln and planer, priced lower as framing and studs
- Hemlock – Wait for volume increase in YG stands
 - 7” diameter, Firewood, another 10 years or small-diameter high-efficiency mill
 - Higher value finished product, window trim or shiplap siding—a better price substitute in the local market for old-growth cedar than Sitka spruce
- Need supply of old growth cedar for high value wood products for cash flow during transition
 - Shingles, siding, decking, etc.

Operator Needs



Photo credit: U.S. Forest Service, Southwestern Region, Kaibab National Forest



1
Secure Timber Supply

2
Quality, Market Access

3
Equipment Investments



1. Timber Supply

- 14,200,000 MMBF listed in 2023 was originally estimated based on input as 200 MBF in small sales and one 14 MMBF large sale
 - JK Lumber, alone, conveyed interest in an annual 250 MBF of YG
- Problem – Unintended competition
 - Small and large competing for YG (total volume and number of sales)
 - Small competing with small
 - Need sales to open throughout the year for multiple opportunities to bid
- 5-Year Supply: Can't finance/invest in equipment without long-term outlook
 - e.g., 650-1,250 MBF for JK Lumber, alone
- Old growth Western redcedar
 - Variety of interest among small mills: 80/20 vs 20/80



2. Quality & Market Access

- Grading
- Wholesale Buyers
 - Quality benchmark
 - Zero wane, kiln dried and planed
 - Price – \$0.50 est. max. local premium per linear foot that regional market will bear (Juneau wholesale)
 - Shipping
 - Story/Marketing
- Housing - Market analysis



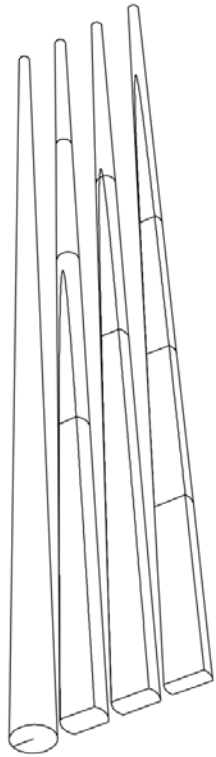
3. Equipment – Harvesting & Stationary

- Processors/Delimiters mechanical harvesting equipment required by a young growth industry
 - Young growth trees have more branches than old growth trees
 - JK Lumber currently loses significant time limbing logs by hand with a chainsaw
 - Unviable for long-term, efficient operations
- Kiln capacity bottleneck
- Biomass utilization – Log recovery and value for waste is a bottleneck to economic viability and efficiency



Efficiency Estimates

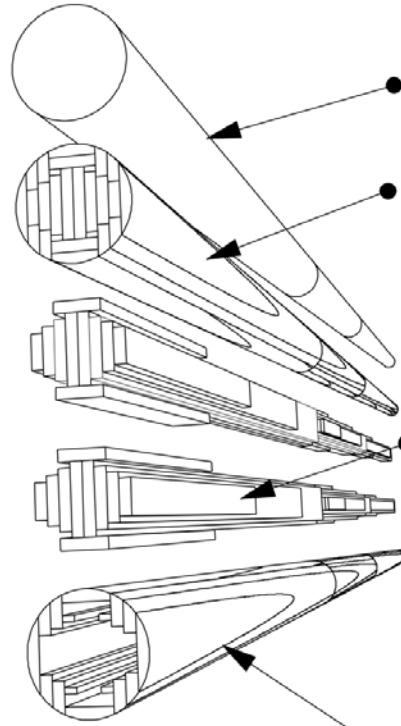
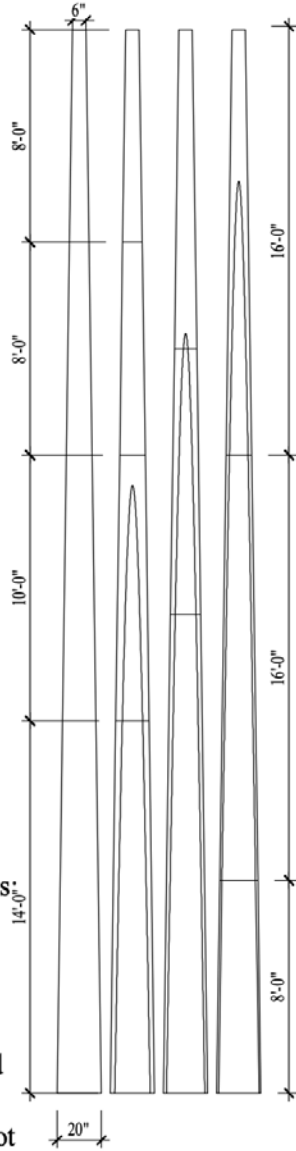
- 485 Board feet in 40' log, 20" base 6" tip
- 41-59% est. Yield, Maximum 59% with Slab Recovery
 - 10% Premium/Select
 - 31% Construction
 - 18% Utility
 - 41% Biomass Residuals
- Ketchikan Pulp Company at 47% recovery to maximize for export-grade lumber rather than yield; could have been max. 62-67% with top equipment if maximizing yield
 - Thinned vs. unthinned stands had “no effect on volume recovery for Sitka spruce”



Study of log bucking and primary breakdown options:

12x, 10x, and 8x opening face for resaw (above)

Log bucking options based on local sidehill timber conditions and butt log knot integrity.



Study of whole tree lumber and slab volumes (rough)

- Total log volume (convert tonnage to ~30% moisture)

- Sawing pattern in this example is pushing long dimensional stock from quality butt logs.

- Sawing pattern in the examples of yield shows a maximum recovery from slabs of utility grade lumber, including rough cut 1x4s and 1x6s.

- Slab volumes are shown with the maximum recovery but note the 90 board foot "swing" from recovered utility lumber so actual utilization may range from low 40% to high 50% based on log quality and sawmill optimization.

Total board feet per log: 485
 Modeled sawing pattern merchantable yield: 288
 Biomass residuals per log at maximum yield: 197 MBF, 1.5 tons
 Minimum yield without 90 board foot slab recovery: 198
 Biomass residuals depending on range of yield: (tons): 1.5-2
 Biomass conversion factor: 7.5 tons per MBF

| | | |
|---|-------------------------------|-----------|
| FOR: REVIEW/EST. | DATE: 1/07/23 | REVISIONS |
| | SCALE: 3/16" = 1" | DATE |
| SHEET: 1 | DSN TEAM: ELJ/GEORGIA | BY |
| | DRAWING TITLE: LOG DIMENSIONS | |
| Sustainable Timber Investment eXchange (STIX.L3C), A Vermont Limited Low Profit, est. 2007 with a timber utilization mission. Eli Gould, Founder & sole member/manager. All rights reserved. Phone: 802-258-0800 ironwoodbrand@gmail.com COPYRIGHT 2022 | | |

PRINCE OF WALES ISLAND SAWMILL STUDY

Impact of the Value Chain

Transactional Partners

Small Mill Operator/Processor

Support Partners

Regional Organizations

Demand Partners

Housing Programs, Wholesale

Housing, Timber and Wood Product Demand Volume Study

Housing

100
HOMES



16,875
TONS

Biomass

990
MBF

Utility Lumber

Lumber

2,250
MBF



Timber Harvest

5,490
MBF

366
ACRES



8% of est. 70,000 MBF in Thorne Bay Basin
39% of 2023 POW RD Timber Sale Schedule

Next Steps: Price & Market Analysis

\$0.50

Est. max. \$/ft local premium to be competitive

- Processors price product to cost of goods sold
- Cost and quality comparison of locally produced lumber per house to commercial lumber + shipping
- Determine affordability and public sector support

Processing & Wood Products Sector

Employment



Growth Capacity

Near-term, with timber supply and market access

1,000
MBF/YR

Maximum production of 44 homes per year
(2.3 years to meet demand)

Current Capacity

130
MBF/YR

Kiln

2 MBF/LOAD

Maximum production of 6 homes per year
(17.3 years to meet demand)

Coefficients & Conversion Factors

Housing

- 23 MBF estimate per house at 15 board feet per square foot (low-efficiency stick frame construction) and 1,500 Square foot house
- Usage of Premium and Construction grade, 41% of total log volume

Timber, Log Volume & Grade

- 15 MBF/acre average young growth stand
- 485 Board feet in 40' log, 20" base 6" tip
- 10% Premium/Select
- 31% Construction
- 18% Utility
- 41% Biomass Residuals

Biomass

- 18% of total log volume recovery is utility grade lumber
- 41% of total log volume is biomass residuals at 59% maximum recovery of merchantable material
- 7.5 Average Green tons/MBF

All figures are estimates.

Appendix

| | Interviewee Name | Title/Organization | Location | Date |
|----|--------------------------|--|--|----------------------------------|
| 1 | John Huestis | City Administrator, Thorne Bay | Ketchikan, Thorne Bay and Goose Creek, In Person | 9/13/22, 11/17/22 |
| 2 | Priscilla Morris | Wood Utilization & Forest Stewardship Coordinator, U.S. Forest Service | Ketchikan, In Person (SE Conference) | 9/14/22 |
| 3 | Mike Sheets | Tongass Young Growth Coordinator, U.S. Forest Service | Phone Call | 9/15/22 |
| 4 | Michael Kampnich | The Nature Conservancy | Craig and Goose Creek, In Person | 9/15/22, 9/17/22, 11/14/22 |
| 5 | Andrew Thoms | Executive Director, Sitka Conservation Society | Ketchikan, In Person (SE Conference) | 9/15/22 |
| 6 | Jon Bolling | Community member, VocTEC Board Member | Ferry, In Person Ketchikan>Hollis | 9/16/22 |
| 7 | Jason Custer | Vice President, Business Development, AP&T | Phone Call | 10/17/22 |
| 8 | Karen Petersen | Biomass Coordinator, Southeast Conference | Thorne Bay, In Person | 11/8/22 |
| 9 | Brian Templin | City Administrator, Craig | Craig, In Person | 11/9/22 |
| 10 | Ann Williams | Dispatch, Alaska Marine Lines | Craig, In Person | 11/9/22 |
| 11 | Charles "Chas" Edwardson | Director, POW VocTEC Center | Klawock, In Person | 11/9/22, 11/10/22 |
| 12 | Quinn Aboudara | Natural Resource Coordinator, Shaan Seet Incorporated | Craig, In Person | 11/11/22 |
| 13 | Jay & Josh Kohn | Owners, JK Forest Products | Goose Creek, In Person | 11/14/22, 11/17/22 |
| 14 | Keith Landers | Owner, K&D Lumber Company | Goose Creek, In Person | 11/14/22 |
| 15 | Nicholas Reynolds | Timber Management Assistant, U.S. Forest Service | Thorne Bay, In Person | 11/15/22 |
| 16 | Caleb Toman | New mill owner | Whale Pass, In Person | 11/16/22 |
| 17 | Don Nicholson | Owner, Fair and Square Lumber | Coffman Cove, In Person | 11/16/22 |
| 18 | Patricia Natkong | President, Hydaburg Cooperative Association | Phone Call | 11/18/22 |
| 19 | Don Nickerson | Mayor of Klawock | Klawock, In Person | 11/18/22 |