

Eastern Oregon Forests & Mills

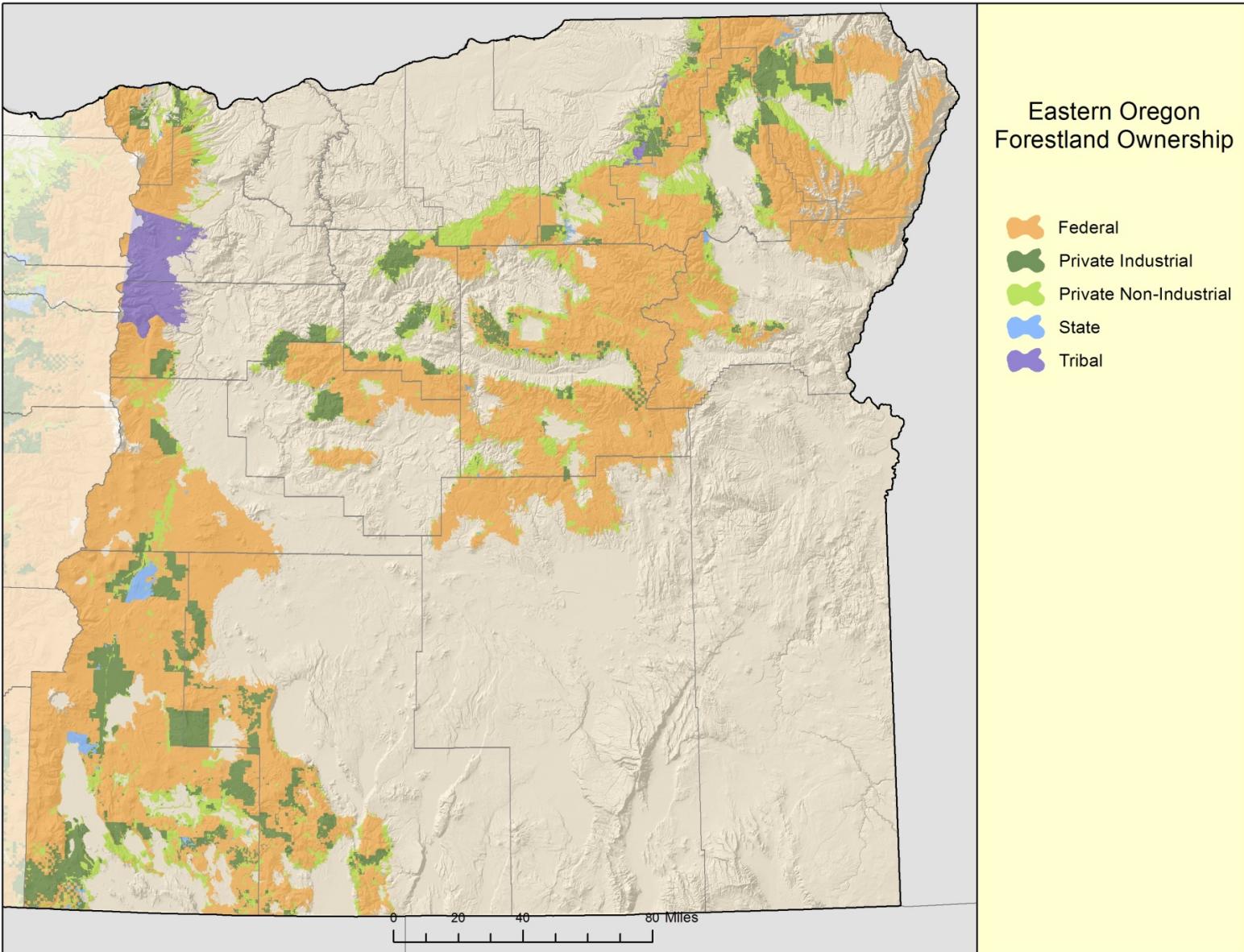
Paul Barnum, OFRI

Mike Cloughesy, OFRI

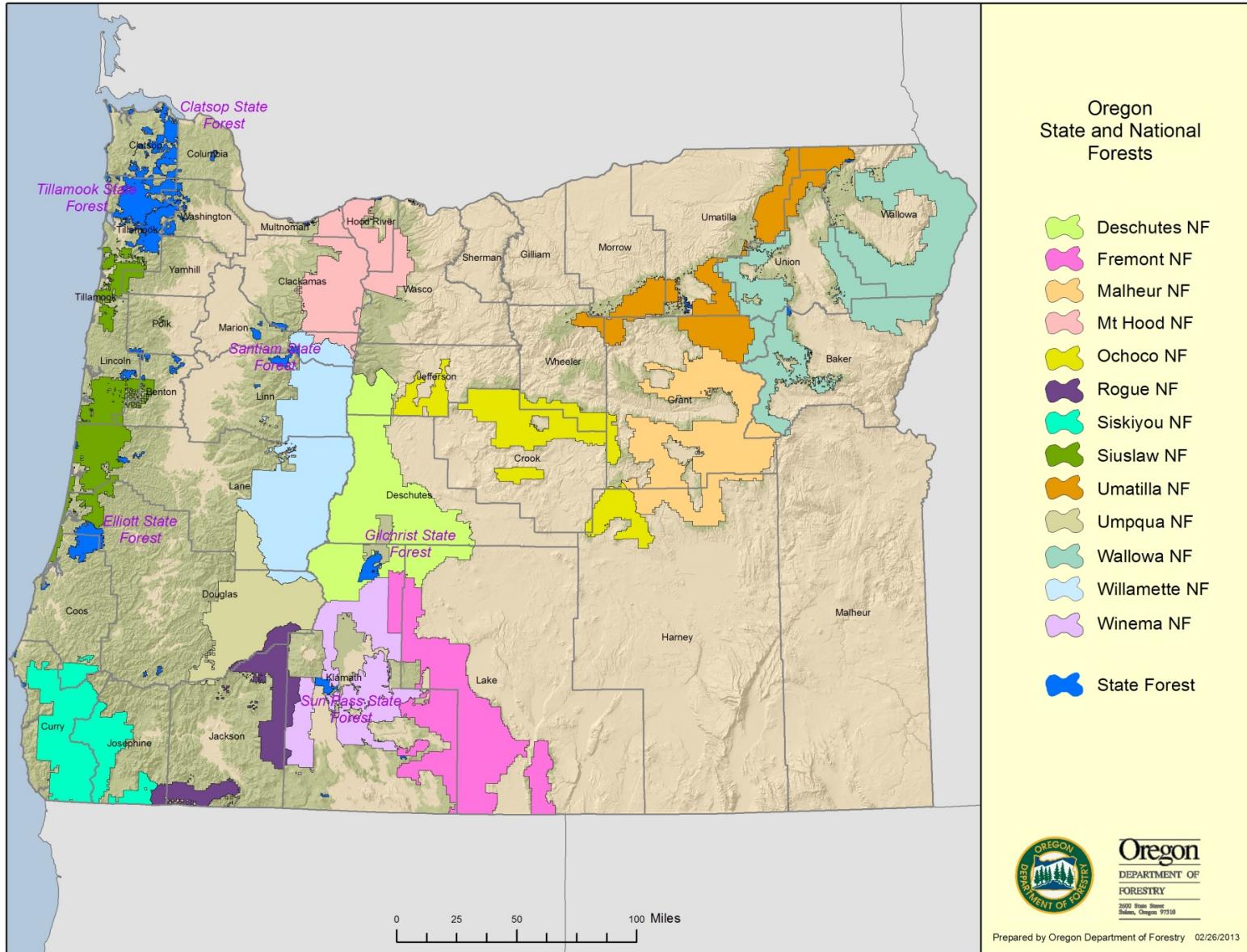
Scott Leavengood, OSU

David Smith, OSU

Forest ownership

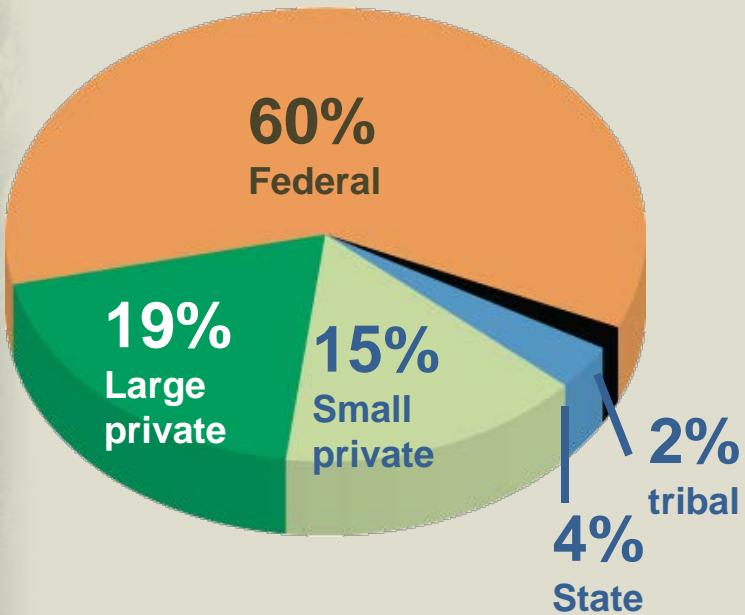


National & state forests

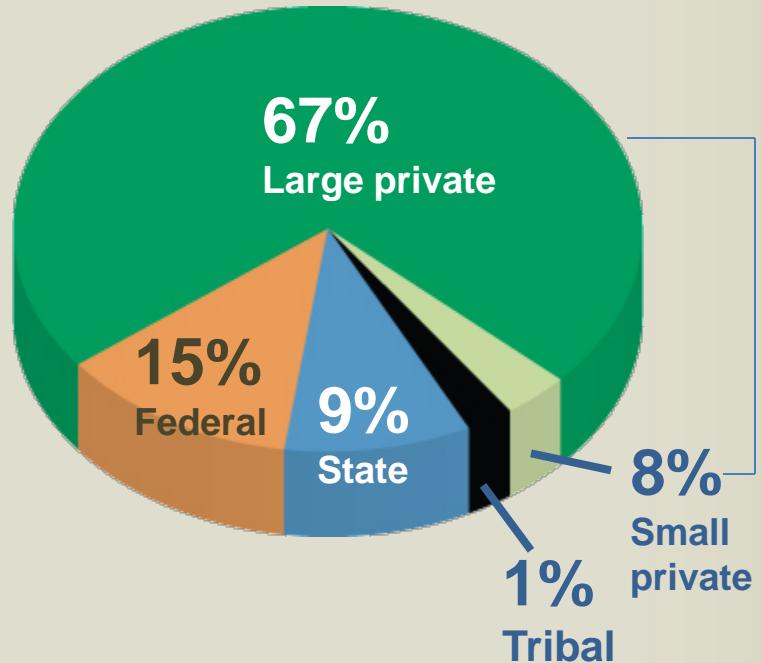


Who owns Oregon's forests?

Ownership



Harvest

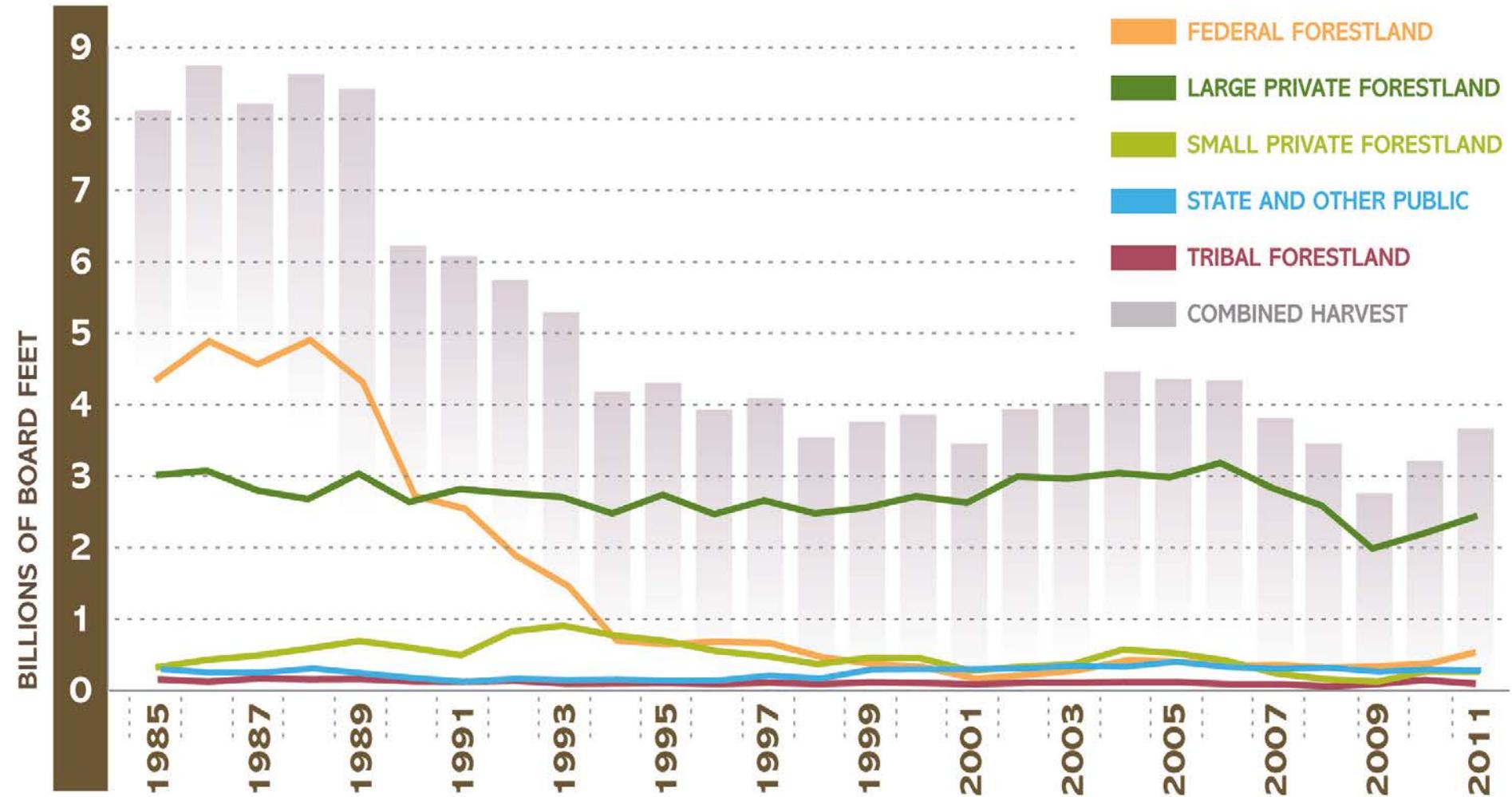


75% of annual harvest comes from private forestland



Harvest by owner

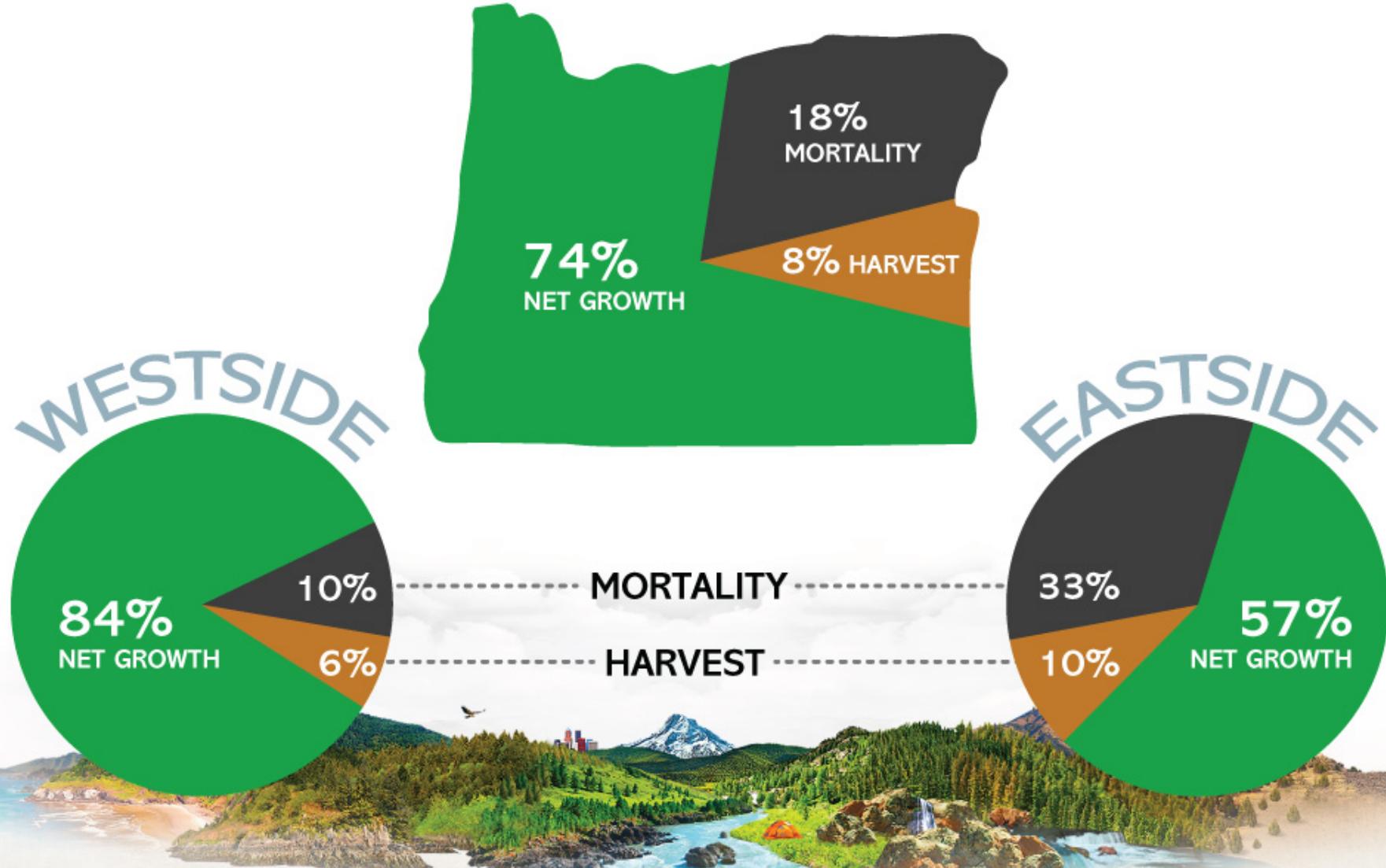
Oregon timber harvest by owner, 25 years





Federal forests

FIA data (2001-05) shows mortality exceeded harvest in Federal forests





Eastern Oregon forestland

Landowner	Acreage	%	
Federal	9,727,000	70.1	✓
State & Other	201,000	1.4	
Large Private	1,709,000	12.3	
Small Private	1,835,000	13.2	
Tribal	396,000	2.9	
Total	13,868,000	100.0	

Source: ODF Resources Planning 2013



Eastern Oregon harvest

(2011 harvest as a percentage of 1991 harvest)

Landowner	1991	2011	%	
Federal	1,123.1	133.2	12	✓
State & Other	5.1	20.3	398	
Large Private	547.2	196.2	36	
Small Private	115.5	21.5	54	
Tribal	66.1	35.4	19	
Total	1,856.9	406.6	22	

Source: ODF Resources Planning



Ownership vs. harvest

(Percentage of harvest by owner, 1991 vs. 2011)

Landowner	Land	1991	2011	
Federal	70.1	60.5	32.8	✓
State & Other	1.4	0.3	5.0	
Large Private	12.3	29.5	48.3	
Small Private	13.2	6.2	5.3	
Tribal	2.9	3.5	8.7	
Total	100.0	100.0	100.0	

Source: ODF Resources Planning



Crisis in dry forests



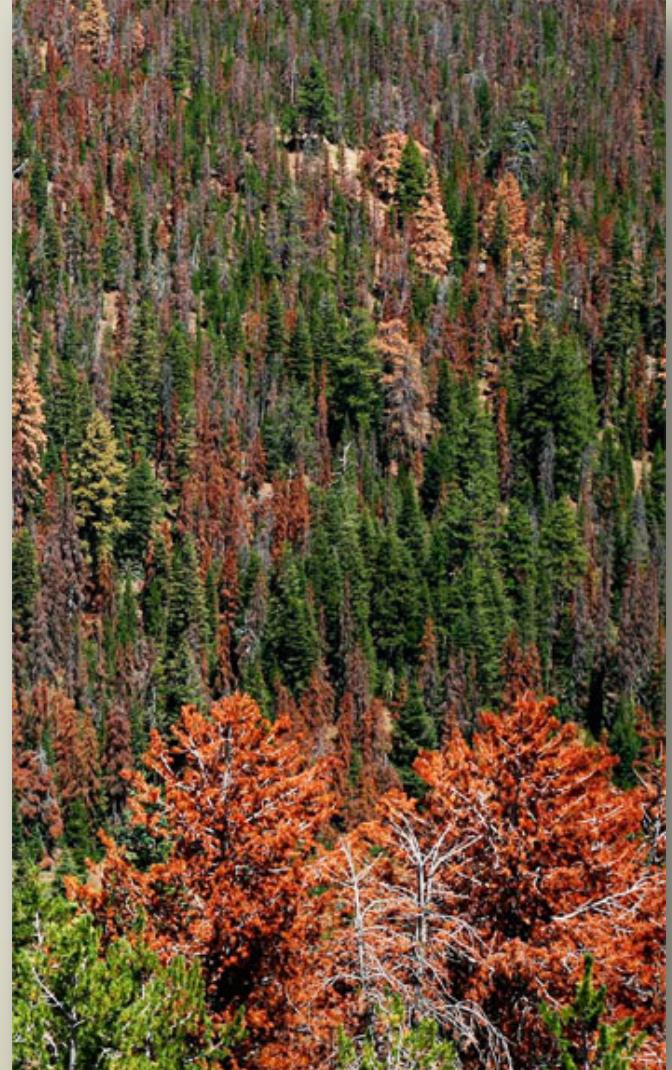
Growing recognition of the need to manage federal forests to restore healthy conditions



Forests “out of whack”



The Nature Conservancy estimates that about 9.5 million acres of Oregon’s east-side forests are moderately or severely departed from healthy ecological condition, due largely to fire suppression and proliferation of small-diameter trees.





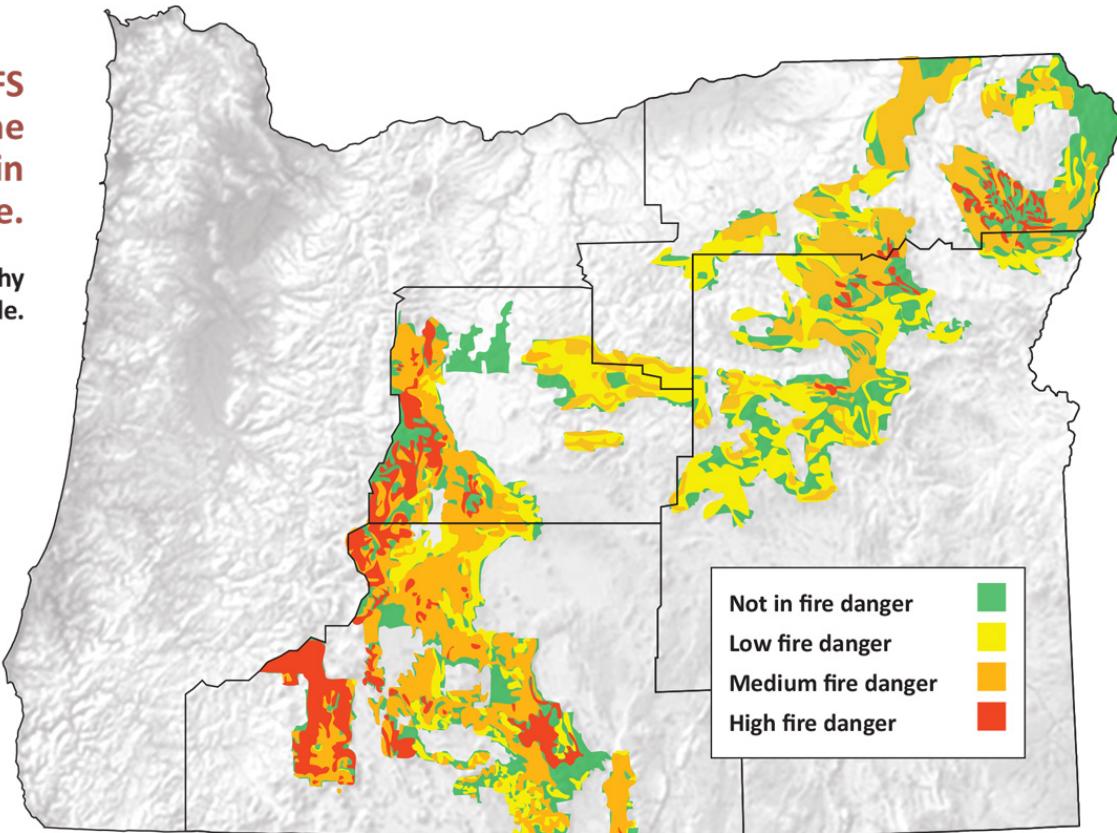
National Forest Health Restoration Economic Assessment

“If Oregon were to double the average number of acres treated annually to benefit and restore ecosystem health on Oregon’s dry-side national forestlands, then what would that cost and what would be the economic benefit?”

Large landscape needs big effort

Much of the USFS forestlands in the study area are in danger of fire.

Restoration can reestablish healthy forests and employ people.



Crown fire potential on Oregon's dry-side national forests

Families are hurting

In dry-side communities
nearly 1 in 5 people live
in poverty.

As of September 2012, the average
unemployment rate in the study area
was 10.8%. Doubling restoration would
create or protect some 2,300 jobs.



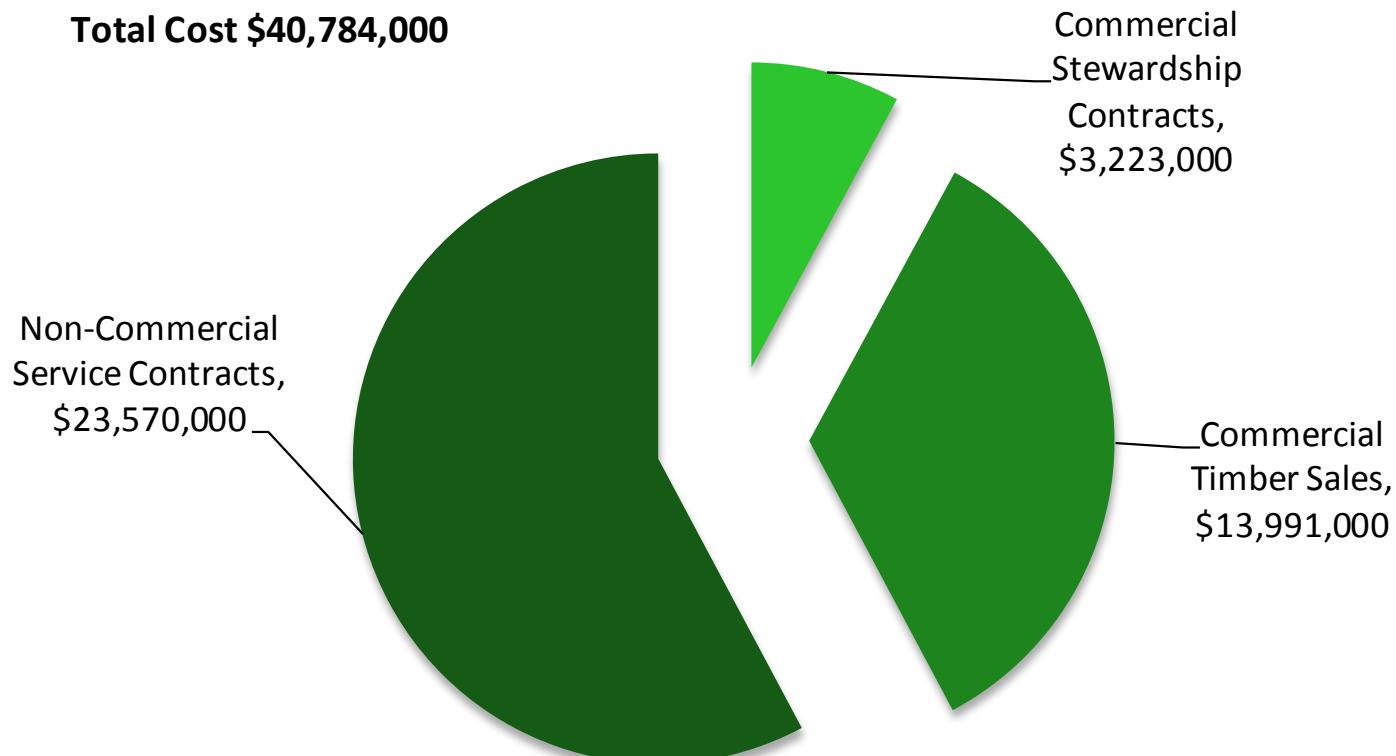
Cost of treating 129,000 acres

Average (2007-2011)

Costs of Restoration Treatments

Averaged Annual, 2007 - 2011

Total Cost \$40,784,000



Average Annual cost of USFS dry-side forest restoration. 2007-2011.

Data Source: USFS TIM, FACTS database, USFS Cost Survey, 2012.



Total economic impact

Average Annual

- **2,310 jobs created or retained throughout the economy**
- **\$90.5 million in total income**
- **\$231.5 million in industrial output**
- **\$3.6 million in state tax revenue**



The study question

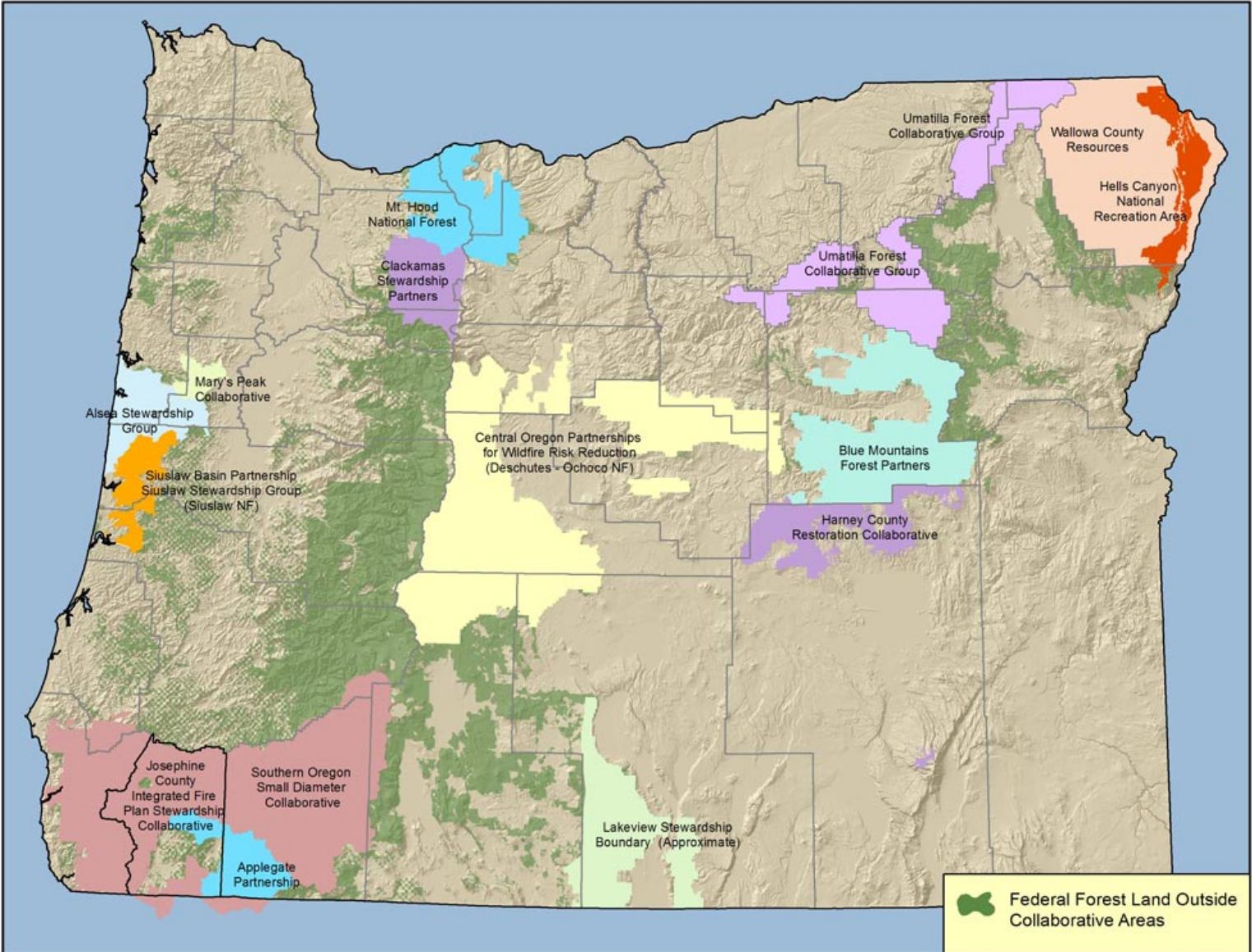
What would happen if we scaled up the amount of restoration in proportion to the problem?



What doubling looks like

Economic Impact	Current Level (2007-11)	Doubling
Jobs	2,310	4,620
Sawlogs	141 mmbf	282 mmbf
Biomass	225,000 bdt	450,000 bdt
Income	\$90,517,000	\$181,034,000
Economic Output	\$231,512,000	\$463,024,000
Tax Revenue	\$3,612,000	\$7,224,000
Acres Treated	129,000	258,000

Collaboratives



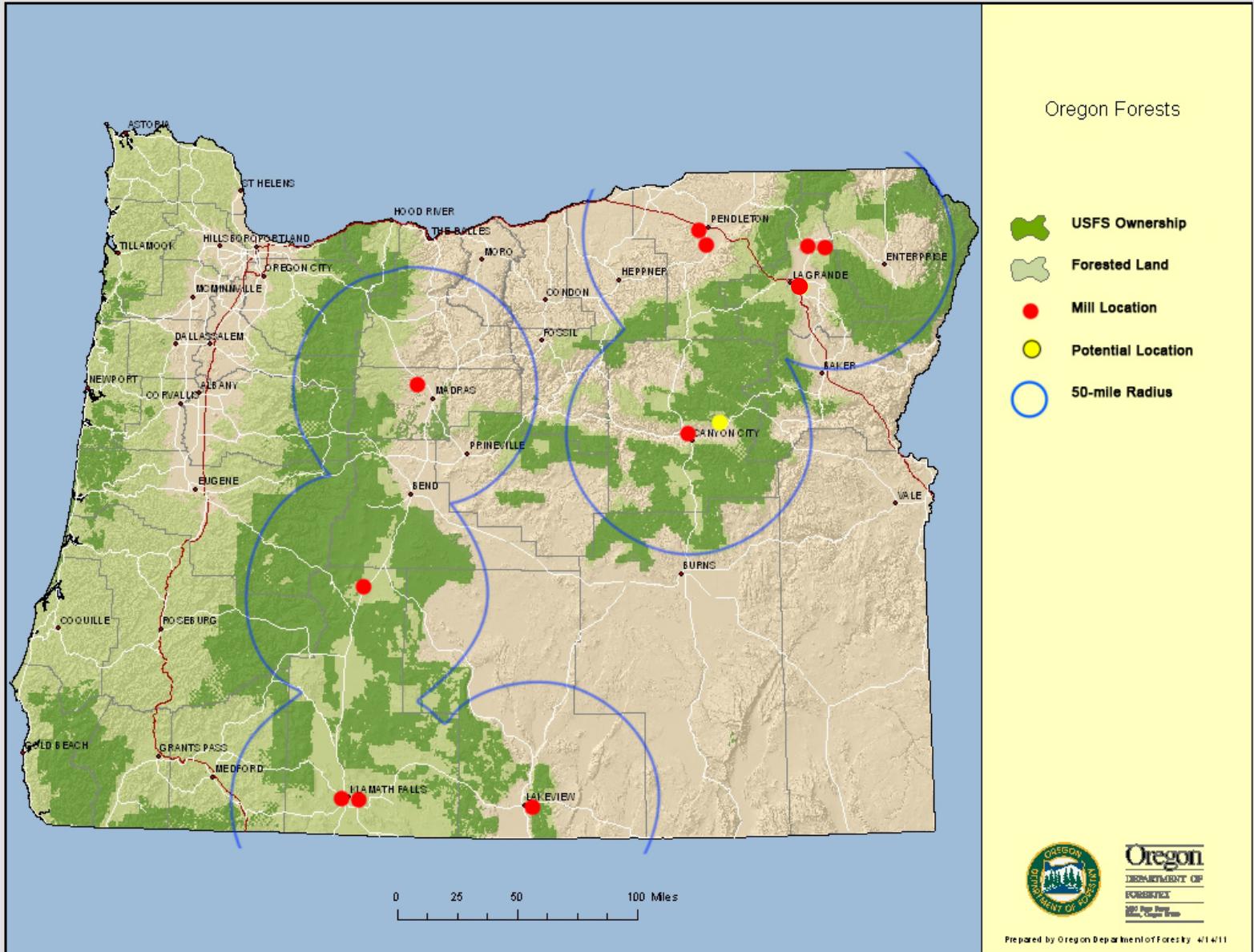
Decline in infrastructure

Oregon is losing valuable forestry infrastructure such as mills, logging equipment and know-how

Since 1980, 55 east side mills have closed and only 11 remain



Eastside mills at risk





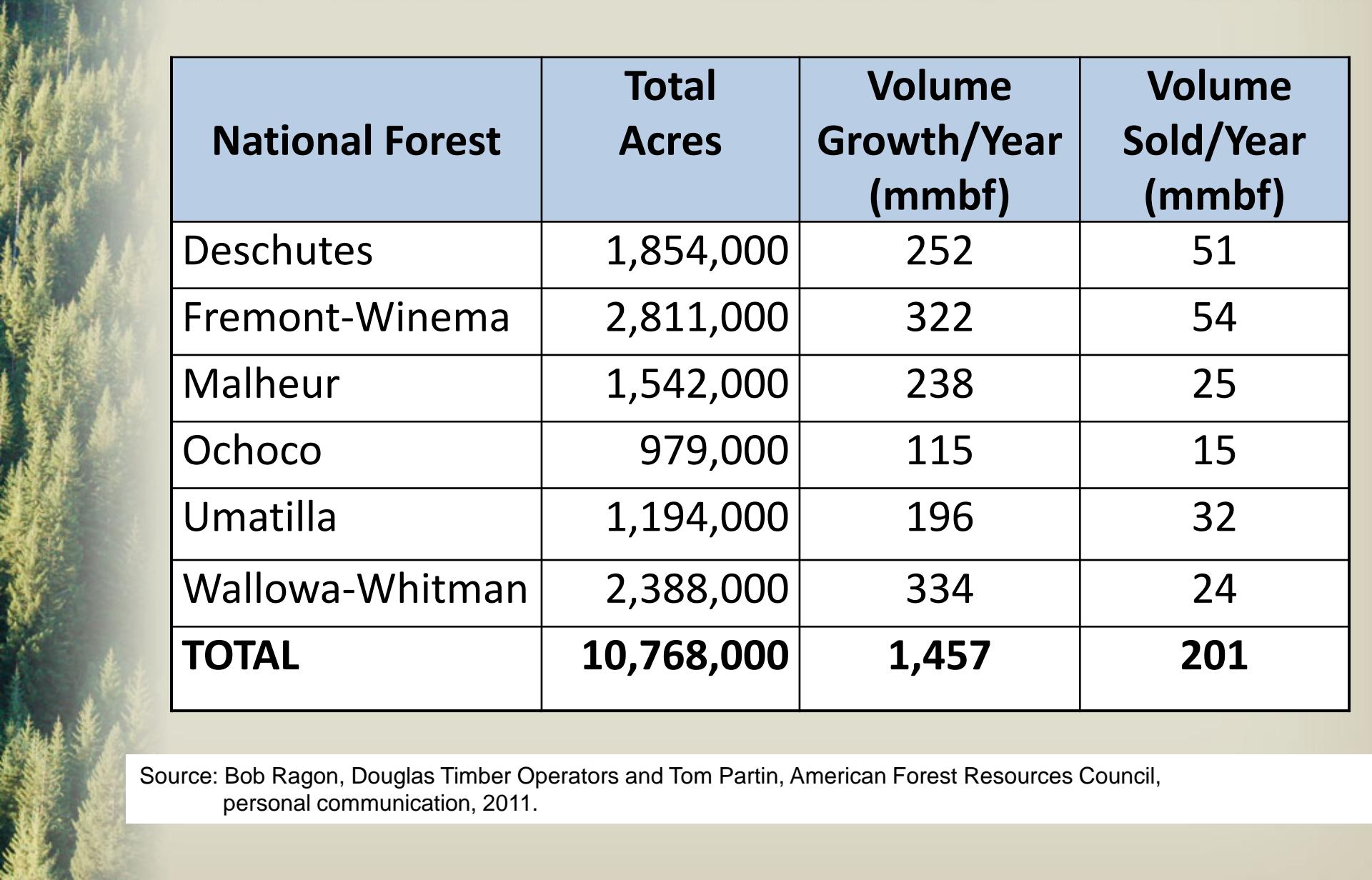
Eastside mills at risk

Company / Mill	Location	Current Employees	Timber Vol. (mmbf)	Estimated % of Capacity
Malheur Lumber Co.	John Day	76	27	54
Warm Springs Forest Products	Warm Springs	129	46	48
Interfor Pacific	Gilchrist	135	75	30
Jeld-Wen/Thomas Lumber Co.	Klamath Falls	56	28	100
Columbia Plywood	Klamath Falls	215	22	100
Collins Fremont Sawmill	Lakeview	75	40	76
Blue Mountain Lumber Products	Pendleton	90	14	100
Boise Cascade	Pilot Rock	84	44	73
Boise Cascade - sawmill	Elgin	114	36	69
Boise Cascade – plywood mill	Elgin	200	71	100
Boise Cascade	La Grande	32	12	17
Total		1,206	415	

Source: Eastern Oregon primary wood products processing facilities and operations. November 2013. Larry Swan, USFS, State & Private.



National forest timber sources



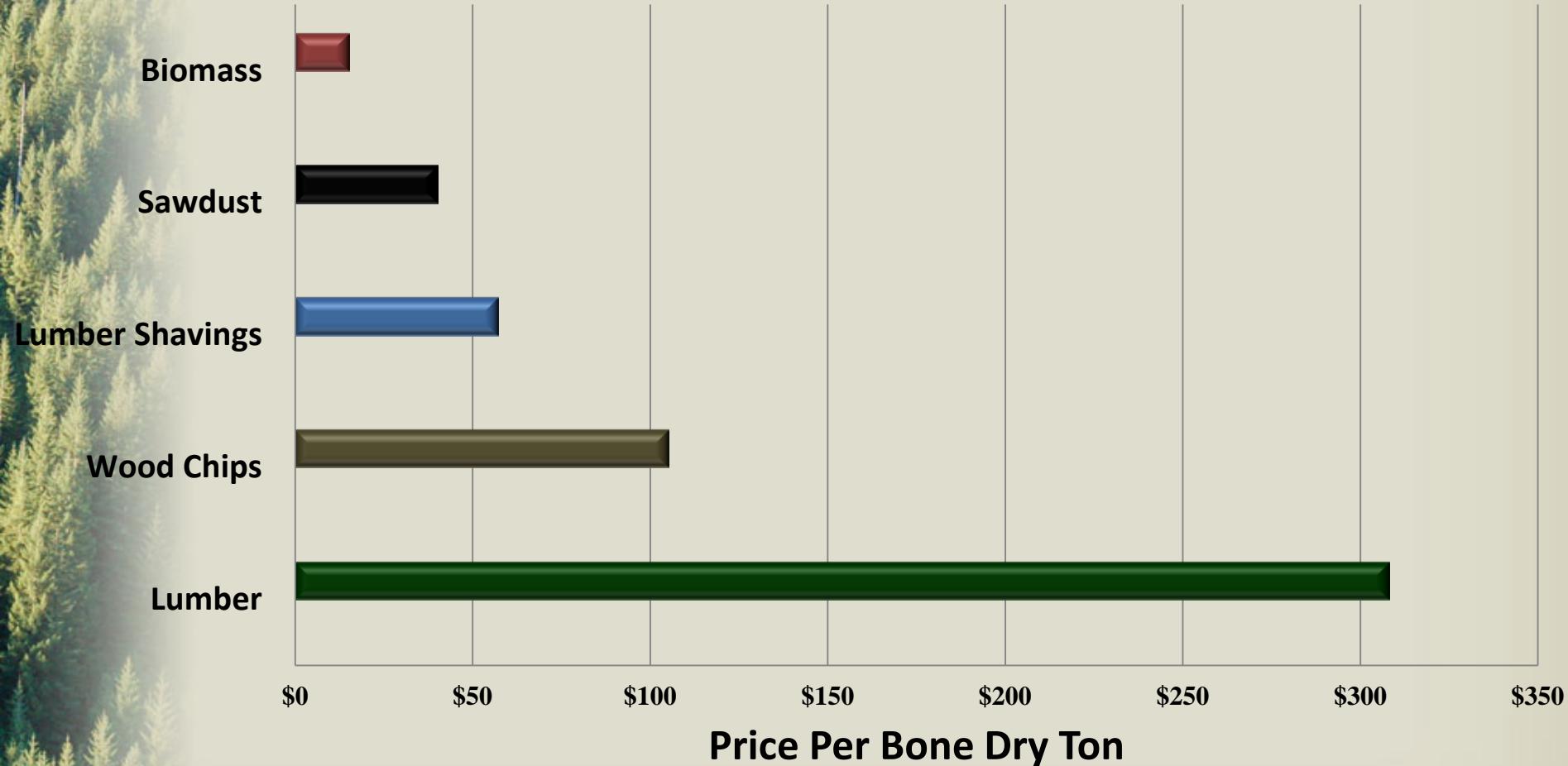
National Forest	Total Acres	Volume Growth/Year (mmbf)	Volume Sold/Year (mmbf)
Deschutes	1,854,000	252	51
Fremont-Winema	2,811,000	322	54
Malheur	1,542,000	238	25
Ochoco	979,000	115	15
Umatilla	1,194,000	196	32
Wallowa-Whitman	2,388,000	334	24
TOTAL	10,768,000	1,457	201

Source: Bob Ragon, Douglas Timber Operators and Tom Partin, American Forest Resources Council, personal communication, 2011.



Relative values of products - 2011

2011 First Quarter Prices

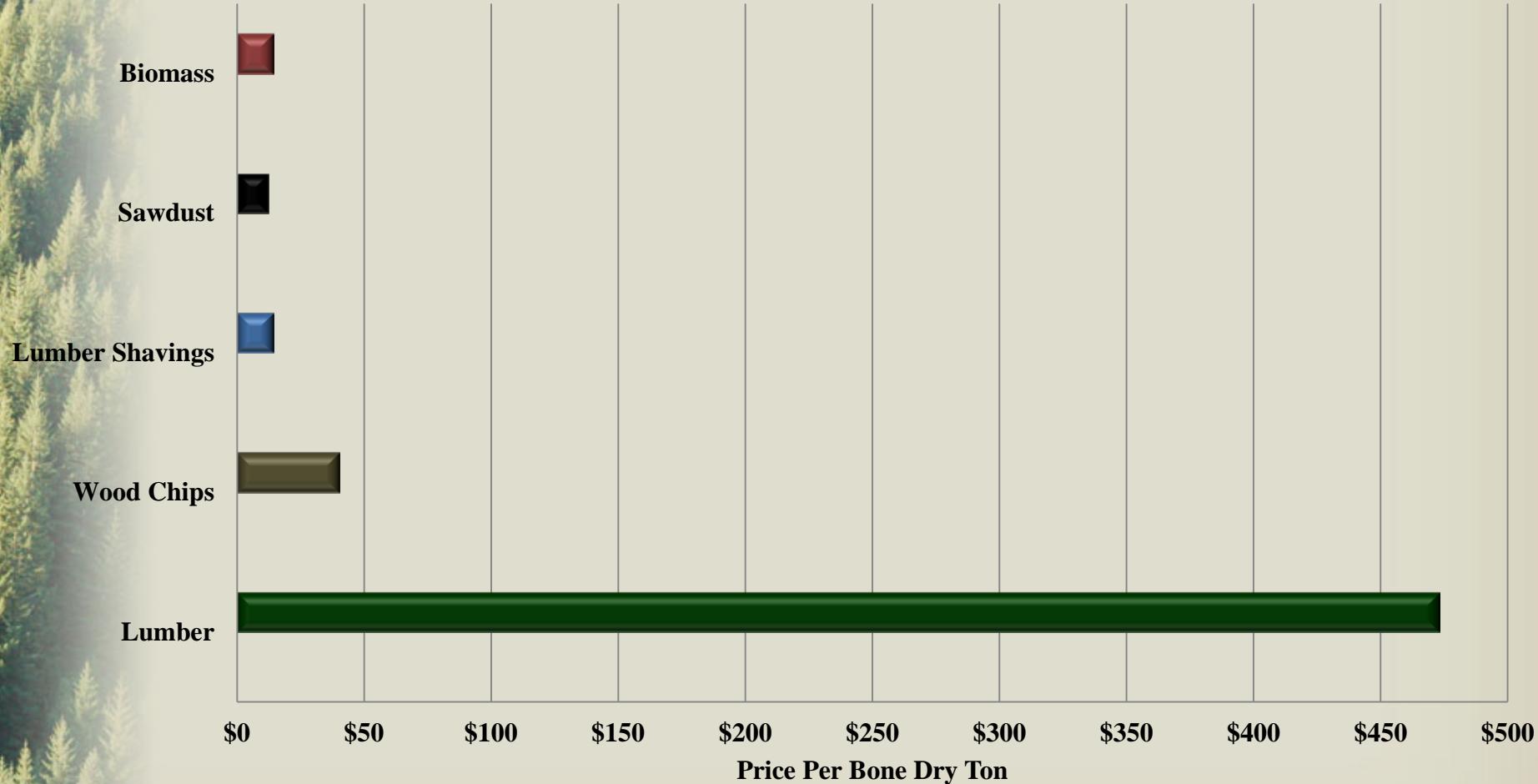


Source: Bob Ragon, Douglas Timber Operators, personal communication, 2011.



Relative values of products - 2013

2013 First Quarter Prices



Source: Bob Ragon, Douglas Timber Operators, personal communication, 2013.



Mill adaptations

Malheur Lumber

- John Day, Oregon
- Pine sawmill – traditional
- Pellet mill – new
- Support biomass thermal cluster
- Brick mill - new
- Shavings mill – new
- Stewardship Contracting
- Collaborative partner

Integrated Biomass Campus

- Enterprise, Oregon
- Sort yard
- Sawlogs to Boise Cascade
- Post and Pole plant
- Packaged firewood
- Densified Fire Logs
- Hog fuel – to Enterprise HS
- Gasification
- Combined Heat & Power



Oregon Wood Innovation Center

Connecting People, Ideas, and Resources

Forest Product Opportunities for Eastern Oregon



Scott Leavengood
Oregon State University





Oriented Strand Board (OSB)

- Structural building product that can use lower strength raw material (e.g., poplar, lodgepole pine, etc.)
- Louisiana Pacific has explored Central Oregon a time or two – supply is always an issue.





Cross Laminated Timber



studio630.tumblr.com



e-architect.co.uk



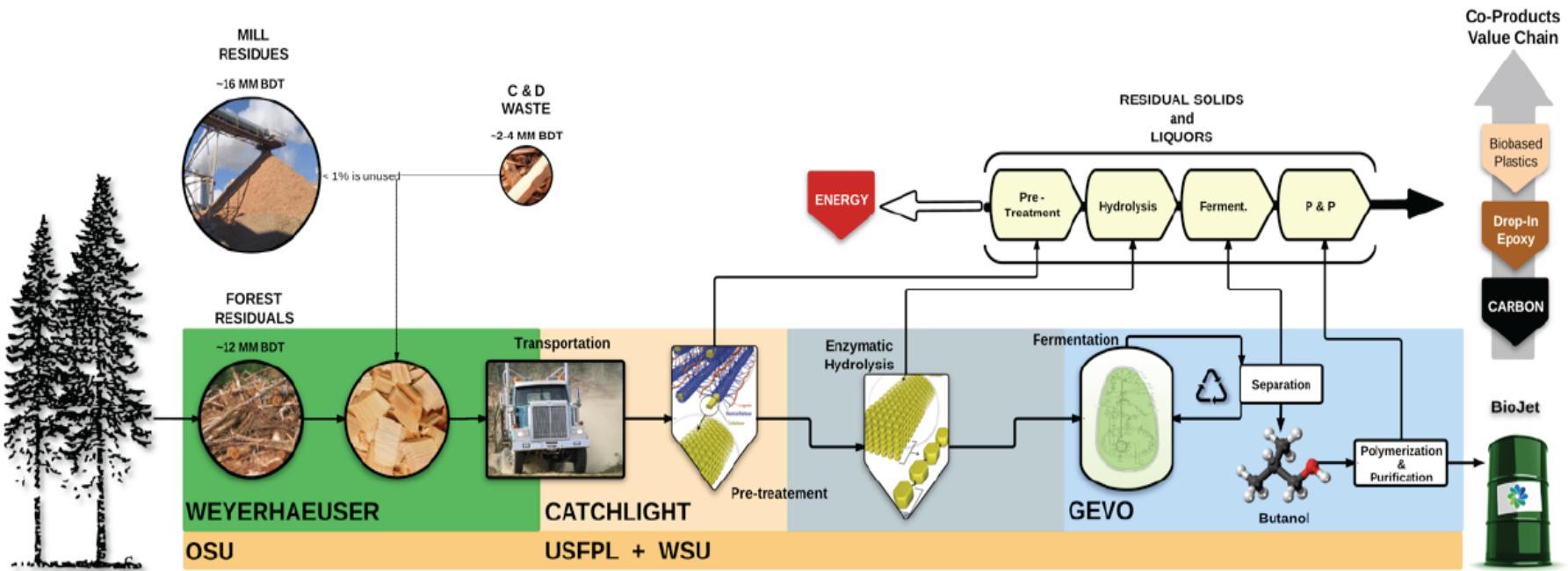
“Plywood on steroids”

- a massive structural composite panel
- 3 to 9 lamina of dimension lumber arranged perpendicular to each other



Width: up to 3.2 m
Length: up to 16 m
Thickness: up to 40 cm
Pre-cutting: cuts for windows, doors, ducts
Wood species: Spruce , Pine or Larch

NARA bio-refinery project



NARA PATHWAY TO BIOJET AND CO-PRODUCTS

Northwest Advanced Renewables Alliance



Oregon Wood Innovation Center

Connecting People, Ideas, and Resources

Changing the Biomass Value Proposition



David Smith
Oregon State University



Hog fuel value is low





Current value proposition

Maximize Volume:

- Incentives needed to get it out of the woods

Minimize Costs:

- Energy markets are not competitive due to low cost alternatives
 - Natural gas
 - Hydroelectric

Few Customers:

- Weak industrial markets
- Doesn't work for schools





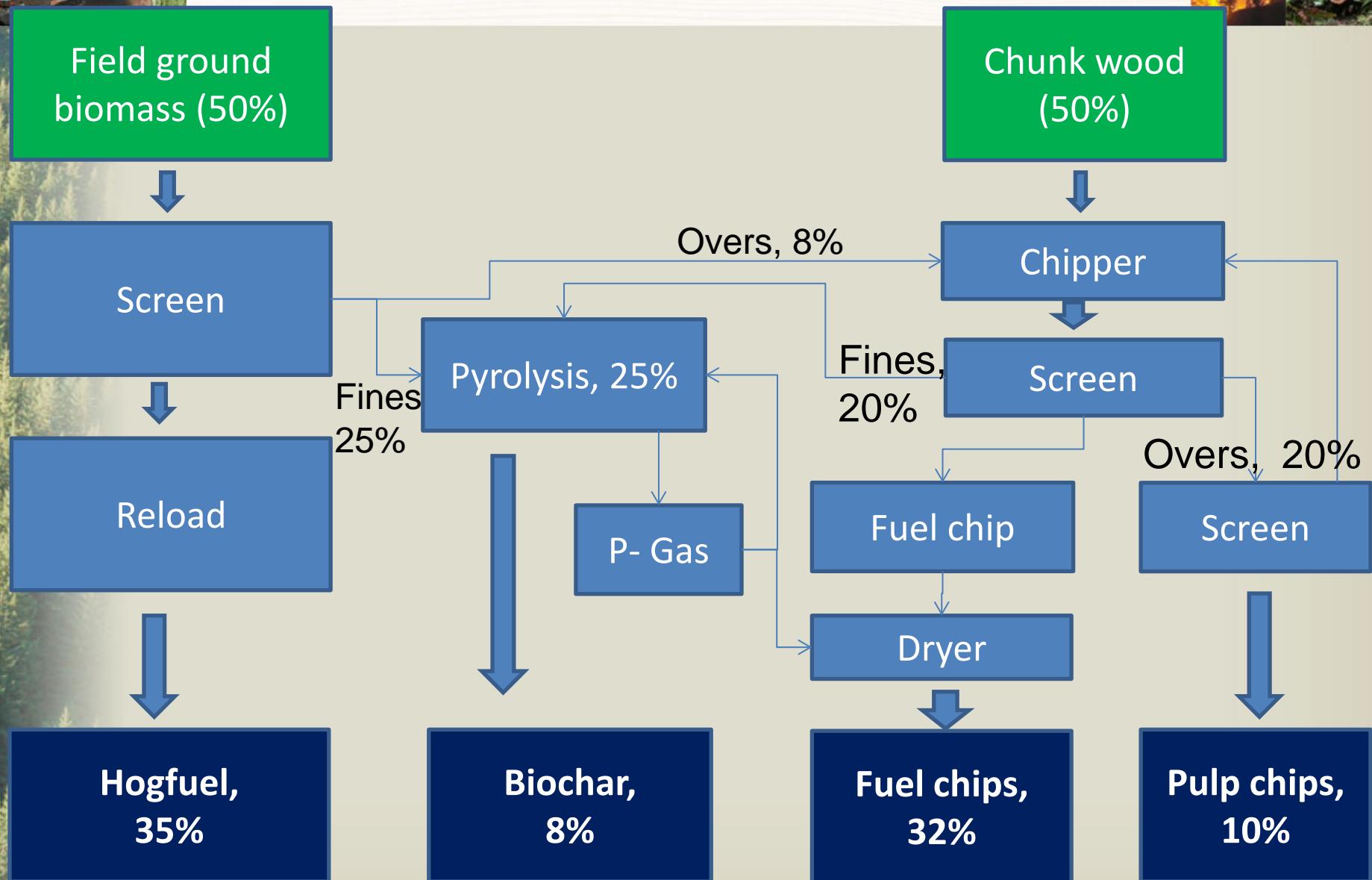
New value proposition

Take a “Manufacturing Approach” to converting forest biomass into higher value products

- Bring coarse material to processing facility
- Equip to make a range of products
- Merchandise material to highest end use
- Operate like a mill
- Make quality products that conform to performance-driven specifications



Example: biomass processing plant





Biomass processing: cost & revenue

Product	Hog fuel	Biochar	Fuel chips	Pulp chips
Value, \$/BDT	\$45	\$250	\$140	\$100
Volume, BDT/year	17,500	4,000	16,000	5,000
Annual revenue	\$787,500	\$1,000,000	\$2,240,000	\$500,000
Total annual revenue (new value proposition):				\$4,577,500

Old value proposition: 50,000 BDT hog fuel x \$45/BDT = \$2,250,000



Eastern Oregon forests & mills



- Federal forestland at risk of uncharacteristic fire due to overstocking of trees
- Need active management to restore health
- Restoration yields mostly low-value, small diameter timber
- Mills at risk of closure - lack of timber supply
- Existing mills need sawlogs to stay open
- New markets needed for small diameter timber and biomass
- Successful mills must utilize available timber



THANK YOU !



Oregon Forest
Resources Institute



Oregon Wood Innovation Center

Connecting People, Ideas, and Resources

