

IRVING WOODLANDS IN MAINE



VITAL STATISTICS

- Over 60 years of operations in Maine
- 1.255 million acres in Maine (7% of the forested land in Maine)
- A team of 30 forestry professionals working on the ground in Maine
- Voluntary Conservation Program – 241 sites and growing
- Voluntary investments in forest science with UMaine, Manomet, Inland Fisheries & Wildlife and other partners
- Irving Woodlands LLC plants 70% of the planted trees in Maine – over 60 Million seedlings in the last 35 years

Sustainable Forestry in Maine means **LESS THAN 2.5%** of the land base is harvested every year



The mark of responsible forestry



ECONOMIC IMPACT (2016)

Forestry & Forest Products in Maine

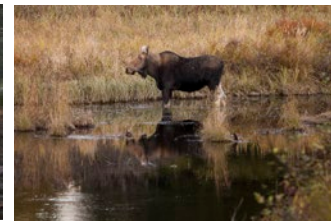
- Jobs: Over 2,400 (direct, indirect and induced)
- Annual Employment Income: \$90.7 million (direct, contractor & indirect)
- Over \$60 million in local Maine purchases
- Over \$70 million in capital investment (2012-2016)
- Providing a dependable and sustainable wood supply to numerous customers throughout the State of Maine

2.9 Million Trees Planted in 2016

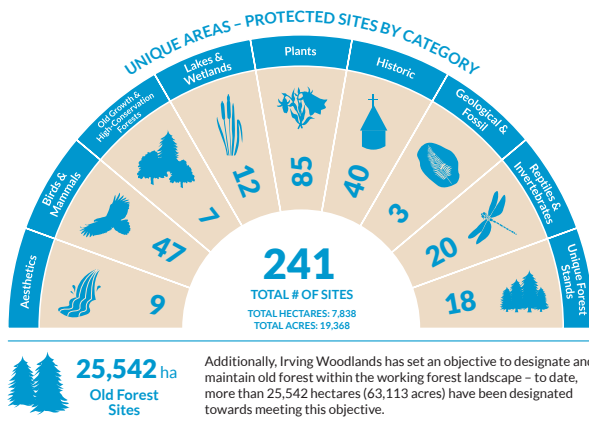
Sustainable Forest Management Planning 80-100 Years Ahead



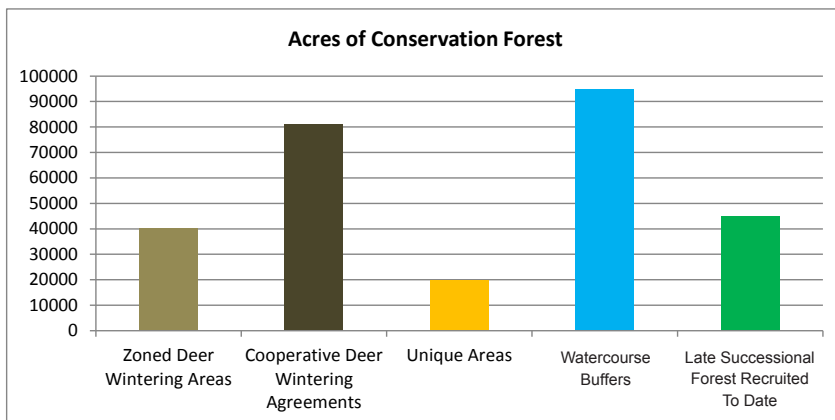
CONSERVATION & RESEARCH



VOLUNTARY CONSERVATION EFFORTS IN THE NORTH MAINE WOODS



122,000 Acres of Deer Wintering Habitat



94,000 Acres of Watercourse Buffers



RESEARCH PARTNERS

Our (voluntary) Forest Research Advisory Committee includes UMaine scientist Dr. A. Weiskittel as well as Mr. A. Whitman from Manomet.

Dr. A. Weiskittel is the Irving Chair in Forest Ecosystem Management at UMaine.

Irving Woodlands, LLC has been a long term and active member of the Cooperative Forestry Research Unit.



OUTCOME-BASED FORESTRY OVERVIEW



In 2013 we finalized a new management plan for the 1,255,000 acres that we own in Northern Maine.

This forest management plan aligns with the criteria and objectives outlined within the Maine Forest Service's (MFS) Outcome Based Forestry (OBF) law. We are confident that our new plan can be implemented to meet the desired outcomes of the OBF agreement that we entered into with the MFS. This agreement requires that our operations be implemented in a manner that is ecologically sustainable, economically viable and socially responsible.

Outcome Based Forestry requires economic, social and environmental assessment.

http://www.maine.gov/dacf/mfs/policy_management/outcome_based_forestry.html

Our OBF agreement obligates us to maintain independent third party certifications for our woodlands and relieves us from certain provisions of the Maine Forest Practices Act (FPA). Today, our woodland's are certified to meet the standards of the Forest Stewardship Council® (FSC® C041515) and the Sustainable Forestry Initiative® (SFI®) forest certification systems. Under this agreement the FSC US Forest Management standards have been aligned (with additional indicators) with all federal and state laws.

Final OBF assessment is determined by a governor appointed panel of technical experts who report to the director of the MFS. The accompanying table provides a quick reference comparison between OBF and the Maine FPA and the benefits that have been achieved thus far. A summary of our forest management plan and our SFI and FSC certification reports are both publicly posted on our website.

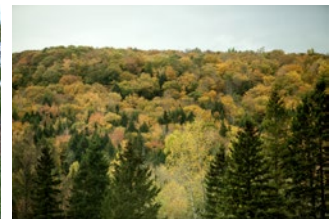
Comparison Between OBF agreement and FPA

	OBF	FPA
State of Maine, Based Technical Experts Review	Yes ✓	No ✗
Independent 3rd Party Certification Required	Yes ✓	No ✗
Provisions to Improve Timber Supply and Quality	Yes ✓	No ✗
Provisions to Protect Forest Health	Yes ✓	No ✗
Provisions to Conserve Biological Diversity	Yes ✓	No ✗
Provisions to Consider Economic and Social Obligations	Yes ✓	No ✗
Reduced Administrative Work for Landowner and MFS Staff	Yes ✓	No ✗
Increased Reporting Transparency	Yes ✓	No ✗
Science Based Harvest Prescriptions	Required for all harvests	Only required for clearcuts
Regeneration of Clearcuts	Required	
Maximum Clearcut Size Allowable	250 acres	
Clearcut Separation Zone Requirements	Landowner can manage with scientifically based silviculture prescriptions	May only be harvested according to prescriptive standards in rule
	Buffering between clearcuts can utilize natural landscape features	Minimum 250 foot separation zones with short term 1:1 acreage requirement
**Required Compliance to All Local, State & Federal Regulations to Protect Water and Wildlife and Protected Resources (i.e. DEP, LUPC, MFS, AWW, Local Ordinances etc.)	Yes	

**The State of Maine has established laws that protect the wildlife, waters and unique natural resources in our State that are above and beyond the FPA. All of the laws protecting our natural resources remain intact and are still subject to compliance under OBF.

http://www.jdirving.com/environment.aspx?id=5334&ekmense1=8_submenu_168_btnlink

BENEFITS OF OUTCOME BASED FORESTRY



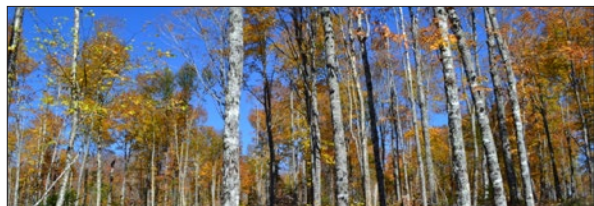
- ✓ Less road building (40% reduction)
- ✓ Operate on less of the landbase – less fragmentation of the forest
- ✓ Science-based harvest prescriptions = better management
- ✓ Salvaging mortality due to wind damage and disease, improving forest health and reducing forest loss due to mortality
- ✓ Lower operating costs
- ✓ Improved earnings and productivity for 90+ contractors due to reduced equipment moves and related downtime
- ✓ A competitive wood supply for our Maine mills and over 20 others in the state
- ✓ Ongoing local purchases (\$60+ M in 2016)
- ✓ Capital investment to sustain competitiveness (\$70+M 2012-2016)
- ✓ No increase in percentage of clear cutting

“Under outcome based forestry my machines spend less time on a low-bed and this has helped me improve my bottom line.”

**Jeremy Fournier - Ironwood Logging
Eagle Lake, ME (7 employees)**

“KPeI Industrial Services, Inc., is based in Fort Fairfield, ME. We employ 26 people. In an area that has been challenged by out-migration and limited job creation, Irving’s decision to create 63 jobs by investing \$33 million in the Ashland Sawmill was good news for the County and for our business in a particular. This investment and the benefits we have received as a local business and employer are in large part because outcome based forestry ensures a sustainable, cost-efficient delivery of wood to the Ashland Sawmill.”

**Scott Colton
Co-owner
Fort Fairfield, ME**



Science Based
Harvest Prescriptions

“To be successful in the State of Maine, we need to do more than to preserve the status quo. Simply stated, we need to grow and develop opportunities for work, reverse the outmigration of our young people and cultivate a climate conducive to future capital investment.

Maine’s outcome based forestry law has created an opportunity to do just that for one of our suppliers, Irving Woodlands LLC. Under Outcome Based Forestry, Irving has increased its levels of silviculture investments to grow more wood for mills in the State of Maine. As you would expect, an improved and stable fiber supply is critical for employment and good for Maine mills. As well as building a new mill, Irving has worked hard to develop more contractors and increased investments in training operators for the labor pool in the region. These efforts all demonstrate long term commitment to the State, the forest and the people. Outcome based forestry has played a major role for helping Irving do its part.”

**Bert Martin, Director
Woodlands Pulp LLC**

ACCOUNTABILITY

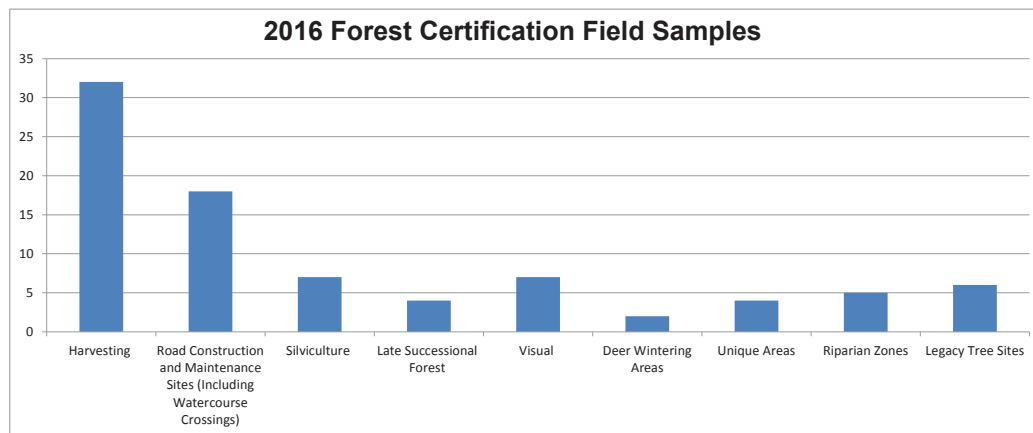


Independent 3rd party verification of our forest management is important for public credibility and confidence. Under our OBF agreement with the MFS, we are required to maintain independent 3rd party certification (aligned with all state and federal laws) for all of our Maine Lands with oversight and endorsement of auditing results by a governor appointed panel of experts.

In 2016, our operations were audited to the standards of the Sustainable Forestry Initiative (SFI) and ISO 14001 as well as the principles and criteria of the Forest Stewardship Council (FSC) – US Forest Management Standards. Auditors found our sustainable forest management system to be in conformance to the SFI program and that the ISO 14001 Environmental Management System (EMS) was being effectively implemented and that overall conformance to the applicable FSC standards was achieved. No corrective action requests and three observations were issued by auditors for FSC indicators under the US Forest Management Standards and will be reviewed in 2017 to evaluate compliance.

Our FSC and SFI certifications require us to minimize and strive to reduce our use of chemical pesticides.

Expert panel findings for 2016 can be found on the Maine Forest Service's website for Outcome Based Forestry. The following graphs depict focal areas for auditors in 2016.



<http://www.jdirving.com/environment.aspx>

IRVING WOODLANDS DETAILED SCORECARD



MAINE WOODLANDS DETAILED SCORECARD

Sustainable Forestry	2015 Maine Data
Resource holdings (freehold - Maine) - Acres	1,255,000 acres in 2016
Land base harvested (%)	2.2% in 2016
Trees planted - # of seedlings	2.9 million in 2016
Forest lost from disease	0 acres in 2016
Forest lost from windthrow	0 acres in 2016
Forest lost from fire	0 acres in 2016
Forest lost from all causes	0 acres in 2016
Mapped watercourse buffers (total)	94,000 acres in 2016
Watercourse distances sustainably managed (total)	275 miles in 2016
Forestry road building (new roads)	69 miles in 2016
Pre-commercial thinning & plantation cleaning completed	1,600 acres in 2016
Tree planting completed	4,200 acres in 2016
Sustainable Forestry Initiative Certification (SFI)	100% of Maine holdings
Environmental Management System Registration (ISO 14001)	100% of Maine holdings
Forest Stewardship Council Certification (FSC)	100% of Maine holdings
Certification Non-Conformances (FSC, SFI & ISO 14001)	0 in 2016
Volunteer Conservation areas on JDI land # of unique areas set aside	241 sites / 63,000 acres

From the Auditor's Report

"Numerous examples of effectively protected riparian areas and waterbodies were observed during the field audit."

"A number of vernal pools were observed during the field audit to be well protected under the Company's Vernal Pool Policy."

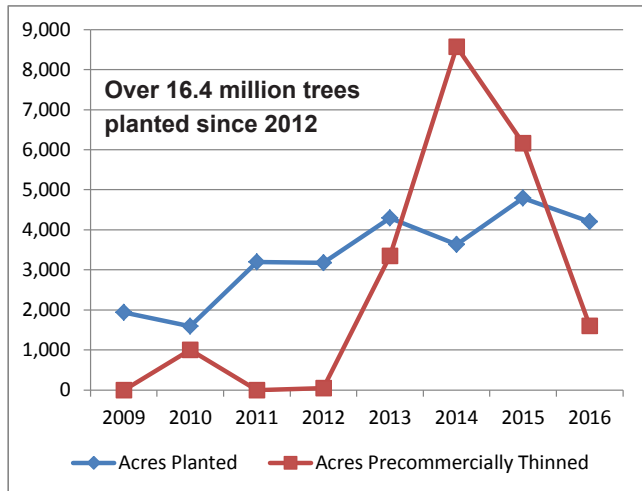
"JDI planners do an effective job of tailoring the silviculture system(s) being prescribed to the stand characteristics (species composition, structure, condition, age(s), etc.), site characteristics (fertility, trafficability) and broad management objectives pertaining to a particular stand. In addition to clearcut systems, a variety of partial cutting silviculture systems are prescribed and implemented by the Company."

2016 OPERATIONS REPORT

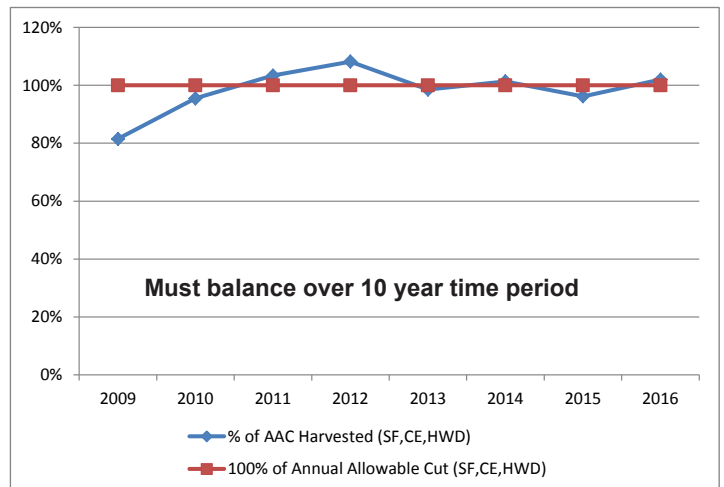


In 2016, our foresters implemented an operating plan that was designed to meet our sustainable forest management strategy as outlined in our management plan under OBF. Operations were conducted under complex environmental, market and economic conditions this past season. The flexibility afforded by OBF to properly plan and execute operations to meet the daily challenges that our people face was a tremendous asset in closing a successful operating year.

Silviculture – Growing a Healthy Forest



Sustainable Harvesting of Forest Products



FOREST MONITORING RESULTS



As part of our commitment to improve the health, growth and long term yield from our lands, we continuously monitor forest health, development and growth and yield (often in cooperation with the MFS). Monitoring is achieved through staff training and observation, stakeholder consultation and input, regular aerial reconnaissance, and an intensive ground sampling program that measures growth and yield dynamics for long term planning needs. The following provides a sample of our 2016 monitoring program.

FOREST SURVEYS

1 st year Planted Stand Survival Plots	95%	Survival issues are mostly related to weather extremes and hylobius weevil.
2 nd year Planted Stand Survival Plots	83%	Survival issues are related to competition, hylobius weevil and weather.
5 th year Planted Stand Survey	3173 Acres	were surveyed and were found to be free from significant competition.
10 th year Planted Stand Survey	3700 acres	were surveyed and found to have significant natural competition that now requires intermediate thinning treatments.
High Conservation Value Forest (HCVF) Survey	7 areas	No management activities occurred in or adjacent to any HCVF. No significant changes have occurred within the designated areas. Old trees continue to show signs of stress and dieback. Insect and disease damage is still evident. No evidence of fire.
Invasive Species Monitoring	All	Glossy Buckthorn, Garlic Mustard and Dog Strangling Vine are invasive species of particular concern, at this time monitoring has not detected evidence of establishment in the woodlands.
Insect Monitoring	92 plots	Irving foresters assisted MFS personnel with insect monitoring, primarily looking for spruce budworm activity (see: MFS website for regional results of findings).

In addition to monitoring forest health and growth, we are obligated and required to measure our impact on the environmental and social aspects of our operations. We strive to protect our environment with programs to improve operations, lessen our impacts on water resources and improve our handling of dangerous goods such as fuel. Operations improvement is the focus of our daily work. It covers all of our operations from planning to reforestation of harvest areas. Programs to improve operations include sustainability of wood supply, public education and communication in forest management affairs, soil conservation by controlling equipment rutting, conservation of biodiversity by protection of habitat, respecting forest cover type distribution and site specific and forest level habitat protection.

Water protection programs include managing our use of dangerous goods near water, careful planning and management of riparian areas, management of siltation from harvest areas, proper installation and maintenance of watercourse crossings, and strict control of activities within municipal water supply areas. These programs all follow existing government regulations and are part of all staff and contractors' daily routines.

The environmental and social impact of our operations is monitored by following an Environmental Management System (EMS) that allows us to record, monitor and respond to incidents as they are reported. Our EMS system is based on a "top to bottom" communication system. Corporate leadership to our regional team flows through the operations. Staff meetings are regular, and operational issues in the form of Incident's and Non-conformances are discussed between staff and contractors every week. All incidents and non-conformances are entered into a database where corrective actions are reported, prioritized and tracked to monitor trends for determining where we are off plan and where improvements need to be made.

In 2016, improvement was below expectation for equipment rutting. Further action plans have been established to assist in meeting established targets. In 2016, 5 public complaints were received and action plans to address those concerns were completed.

STAKEHOLDER ENGAGEMENT



Meeting with and formally addressing stakeholder concerns is part of our 3rd party certification requirements. We have met both formally and informally with individuals and organizations in an effort to incorporate responsible ideas, guidance, suggestions, information/data, positive comments, complaints and concerns into our management planning process.

Organization	Nature of Business
Maine Natural Areas Program	Gathering spatial information on any recent finds of Maine's rare and invasive plants as well as providing the state with details on staff finds. This is done annually.
Maine Inland Fisheries & Wildlife	Gathering spatial information on recent finds of Maine endangered/threatened fauna species and provide details to the State on any JDI staff finds. This is done annually. Spent time with MIFW staff in the field to confirm the use of a number of Great Blue Heron colonies. Regular discussions on issues such as deer and moose management, heron colonies, etc.
Maine Heritage Preservation Commission	Gathering spatial information on any recent archeological finds.
University of Maine (Presque Isle)	Discuss operational constraints on our harvesting equipment that will be in the vicinity of an historic native site.
New England Wildflower Society (NEWFS)	NEWFS provides Irving Woodlands, LLC with detailed information on the status of particular rare plant sites on our land in northern Maine.
Manomet Center for Conservation Sciences	Advice on rare/uncommon forest communities and late successional forests.
Penobscot Environmental Consulting	Advice on retaining and recording legacy trees.
SFI Fisheries Improvement Network (FIN)	Maine Forest Products Council / SFI led group consisting of Landowners, State and ENGO groups dedicated to improving fish habitat state-wide.
Maine Stream Connectivity Network	Regulator, landowner ENGO group formed to improve fish and aquatic connectivity on Maine watercourses.
MFPC Wildlife Technical Committee	Landowner group who discuss fish & wildlife issues, usually with state regulators and user groups like SAM.
Cooperative Forest Research Unit (CFRU)	UMaine researcher-landowner sponsored body which develops and researches a variety of forestry and wildlife interaction issues.
Maine Department of Environmental Protection	Issues concerning invasive forest plant species.

In 2016 we also met with the following:

- Numerous Individuals
- Local Town Boards
- Aboriginal Groups
- Sportsmen Organizations
- Technical Schools
- Other Landowners
- Numerous Forestry Organizations
- Sportsmen Forest Landowner Alliance
- Maine Snowmobile Association Clubs
- ATV Clubs
- North Maine Woods
- Allagash Wilderness Waterway
- Maine Forest Service
- Fish River Lakes Association



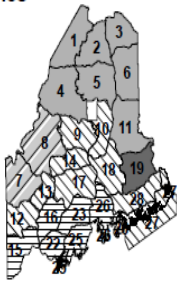
RECREATIONAL USE



Irving Woodlands LLC continues to provide historic, traditional recreational opportunities. Both inside and outside the North Maine Woods framework of Aroostook County, there is a well developed culture that provides public access to private land for engaging in traditional recreational uses. The working relationships developed with both individuals and groups from this sector has been mutually beneficial to all. Continued support of traditional uses such as hunting, fishing, trapping and hiking on our lands are welcome.

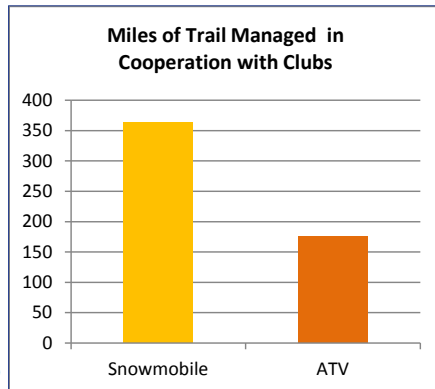
Hunting Zones

- Week 1,2
- ▣ Week 1,2,3
- ▣ Week 2
- ▣ Week 2,3
- November



Week 1: September 23 - September 28, 2013
 Week 2: October 14 - October 19, 2013
 Week 3: November 4 - November 9, 2013
 November Season: November 4 - November 30, 2013
 November 2, 2013 (Maine Residents Only)

Miles of Trail Managed in Cooperation with Clubs



North Maine Woods, Inc.

P. O. Box 425, 924 Main Street, Ashland, Maine 04752

"Experience the Tradition"



INVESTING IN MAINE



WE ARE COMMITTED TO CONTINUOUSLY IMPROVING EVERY ASPECT OF OUR MANAGEMENT AND OPERATIONS.

We want to be partners and good neighbors and we continue to actively work to support our state, our communities, workers, contractors, suppliers and customers.

- ✓ *In 2016 we worked with 30 commercial outfitters offering outdoor experiences in our woodlands*
- ✓ *Cooperative working relations with over 650 camp leases*
- ✓ *Recruiting, developing and training people internally, from our university system and our communities*

2016 INVESTMENTS IN GROWING HEALTHY FORESTS

- ✓ 2,900,000 trees planted
- ✓ 1,600 acres of pre-commercial forest thinning
- ✓ \$2,500,000 silviculture investments in 2016

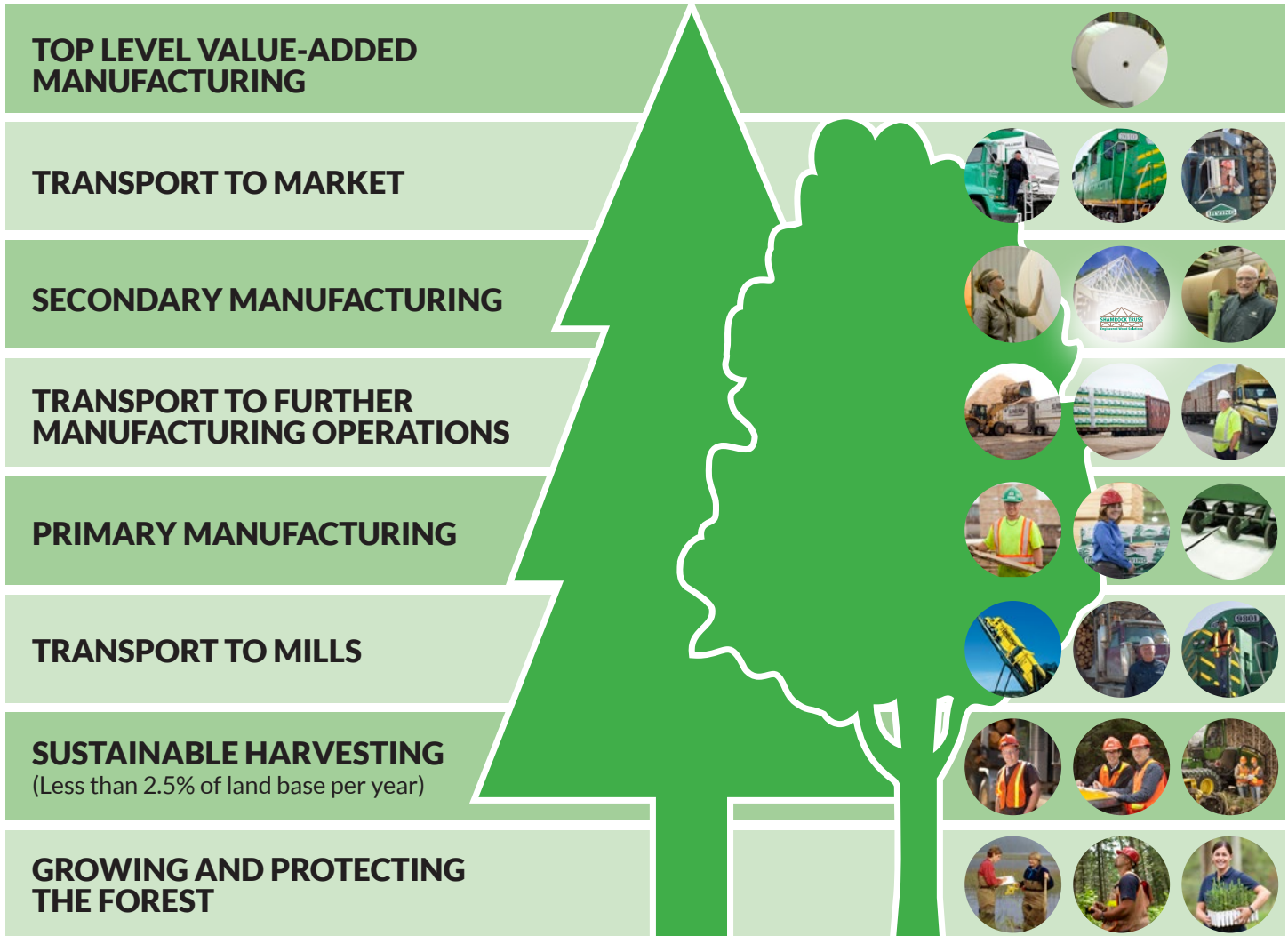
ADDITIONAL PROJECTS UNDERWAY

- ✓ Increased spruce budworm monitoring levels
- ✓ Recruitment of contractors and specialized equipment for working in the forest
- ✓ Development of a new management plan utilizing next generation data and analysis
- ✓ Development and use of precision forestry tools

OUTCOME BASED FORESTRY SUSTAINS A VALUE-CHAIN OF JOBS THROUGHOUT MAINE



HEALTHY FORESTS • GROWING JOBS • VIBRANT COMMUNITIES



Outcome based forestry means a competitive wood supply to many non-Irving mills in the state, including:

Columbia Forest Products
Corinth Pellets
JM Huber
Katahdin Forest Products
Louisiana Pacific

Maibec Lumber
Maine Biomass Exports
Maine Woods Company
Moose River-Jackman
Northeast Pellets

Pleasant River Lumber
Portage Wood Products
Premium Log Yards
Re-Energy Ashland
Re-Energy Fort Fairfield

Sappi
Woodland Pulp LLC
WT Gardner Chipmills