

Menominee Tribal Enterprises

MTE Biomass CHP District Heating System





The Menominee Nation

- The Menominee Nation once occupied 9.5 million acres of land
- The present Menominee Reservation was established in 1854 with 234,000 acres.





The Menominee Nation

- The Menominee retained their island of timber & community by dint of their own tenacity, federal protection and fortuitous circumstance.
- The Menominee hunted, fished and harvested wild rice on their reservation





The Menominee Nation

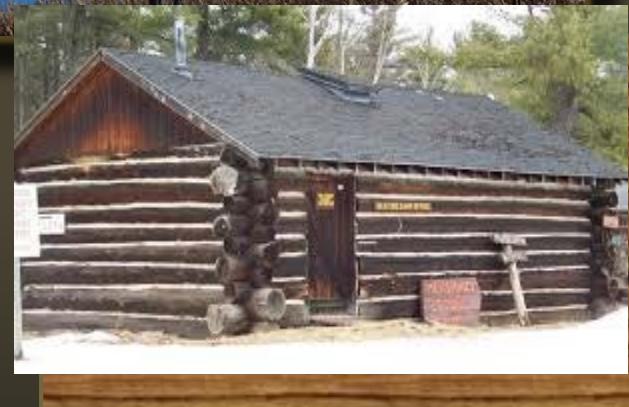
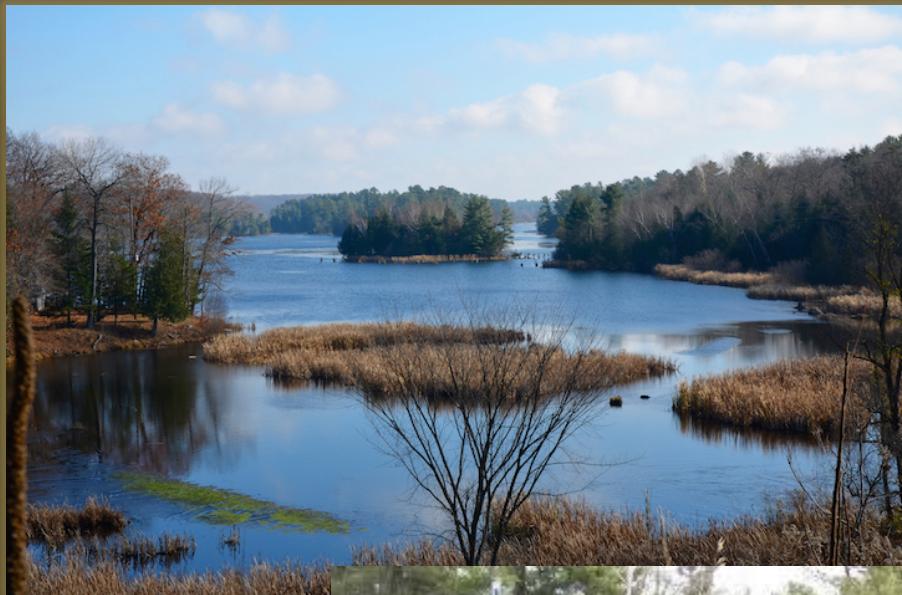
- 95% of the reservation produces the finest old stands of hardwood, pine and hemlock located in the Great Lakes region.
- Forty-six of Wisconsin's timber varieties grow and are harvested on the reservation





The Menominee Nation

- 24 miles of the Wolf River flows through the Menominee Reservation.
- It is one of the last pristine rivers in the state.
- Located along the river at Keshena Falls is the Menominee Logging Camp Museum
- Visitors view over 20,000 artifacts housed in 7 log buildings





Menominee Tribal Enterprises



- MTE is the business arm of the Menominee Indian Tribe of Wisconsin





Menominee Tribal Enterprises



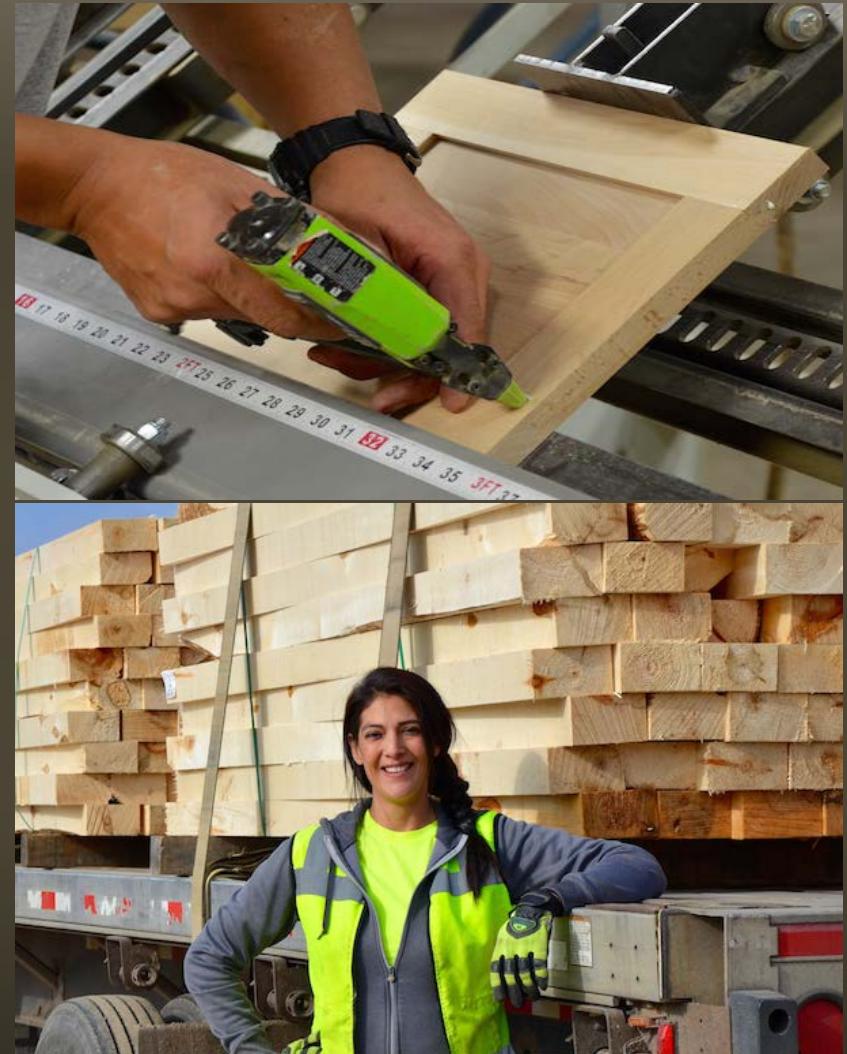
- MTE is owned and operated by the Menominee Indian Tribe of Wisconsin through a 12 member Board of Directors elected from the members at large.





Menominee Tribal Enterprises

- Committed producer and manufacturer of quality sustainable forest products since 1908.
- Employs ~300 individuals throughout its operation. The mill alone employs ~160 in peak season.
- MTE embodies the culture, values and spirituality of the Menominee





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Project Scope

- Demo and Replace a 25,000 PPH boiler with a 8,600 PPH high pressure steam boiler
- Automate and rework existing boiler to operate for peaking and backup
- Install backpressure steam turbine generator
- New Fuel handling, storage and processing system
- Tie additional load to the steam plant
- Repair and replace steam plant infrastructure





Automation and Rework of Existing Boiler

- New PLC controller
- VFD motors
- Air locks
- Replaced worn cyclone vents
- Reduced number of cyclone tubes to match new airflow





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Dramatic reduction in emissions after rework





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Demo old boiler





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Installed new boiler





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Old Fuel Processing and Storage





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New Fuel Processing





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New Fuel Storage





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Deaerator Serves New and Existing Boilers





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Backpressure Steam Turbine Generator





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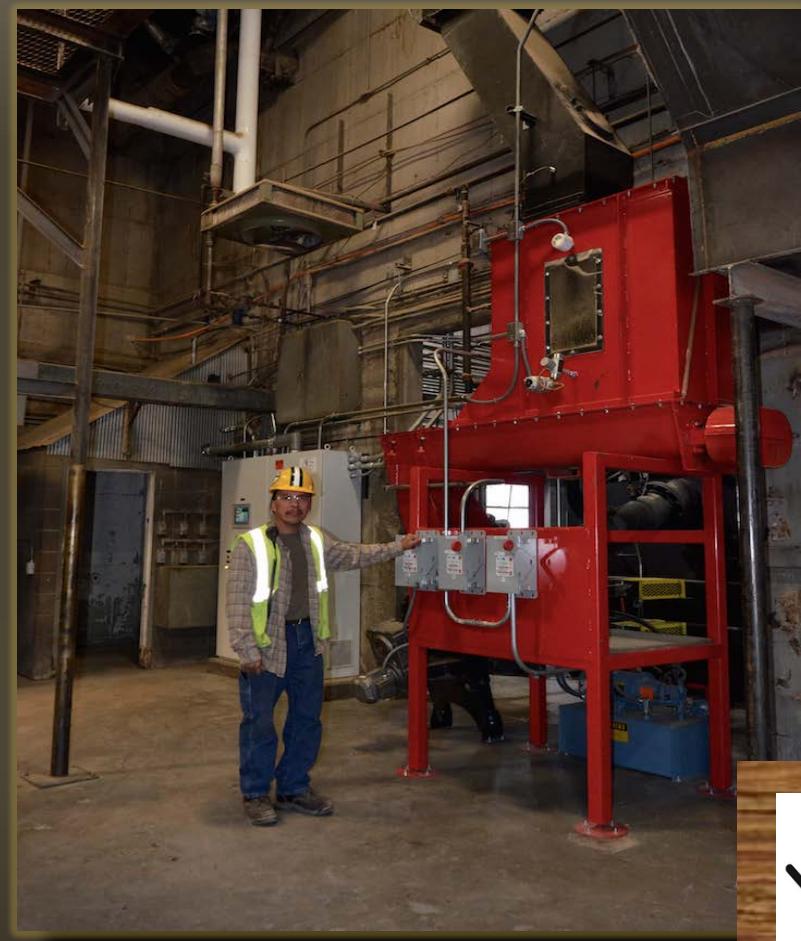
The Bag House





RESULTS

- Reduced fuel use by 11,000 tons per year
- Fuel flexibility
- Labor Savings
- PM reduction of >100 tons per year





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Cost Summary

- **Total Project Cost – \$3,800,000**
- **DOE Grant – \$1,036,000**
- **WBUG Grant - \$250,000**
- **REAP Grant - \$250,000**
- **FOE Incentive - \$150,000**
- **BIA Grant - \$25,000**

Balance funded with MTE reserves and Indian Land Capital Company Loan





Benefits

- Reduce fuel use by 11,000 tons per year
- Generate 1,000 MWh of electricity annually
- Reduction in PM emissions by 115 tpy
- Annual operating savings of >\$500,000
- Replaced aging infrastructure

