

Job Creation

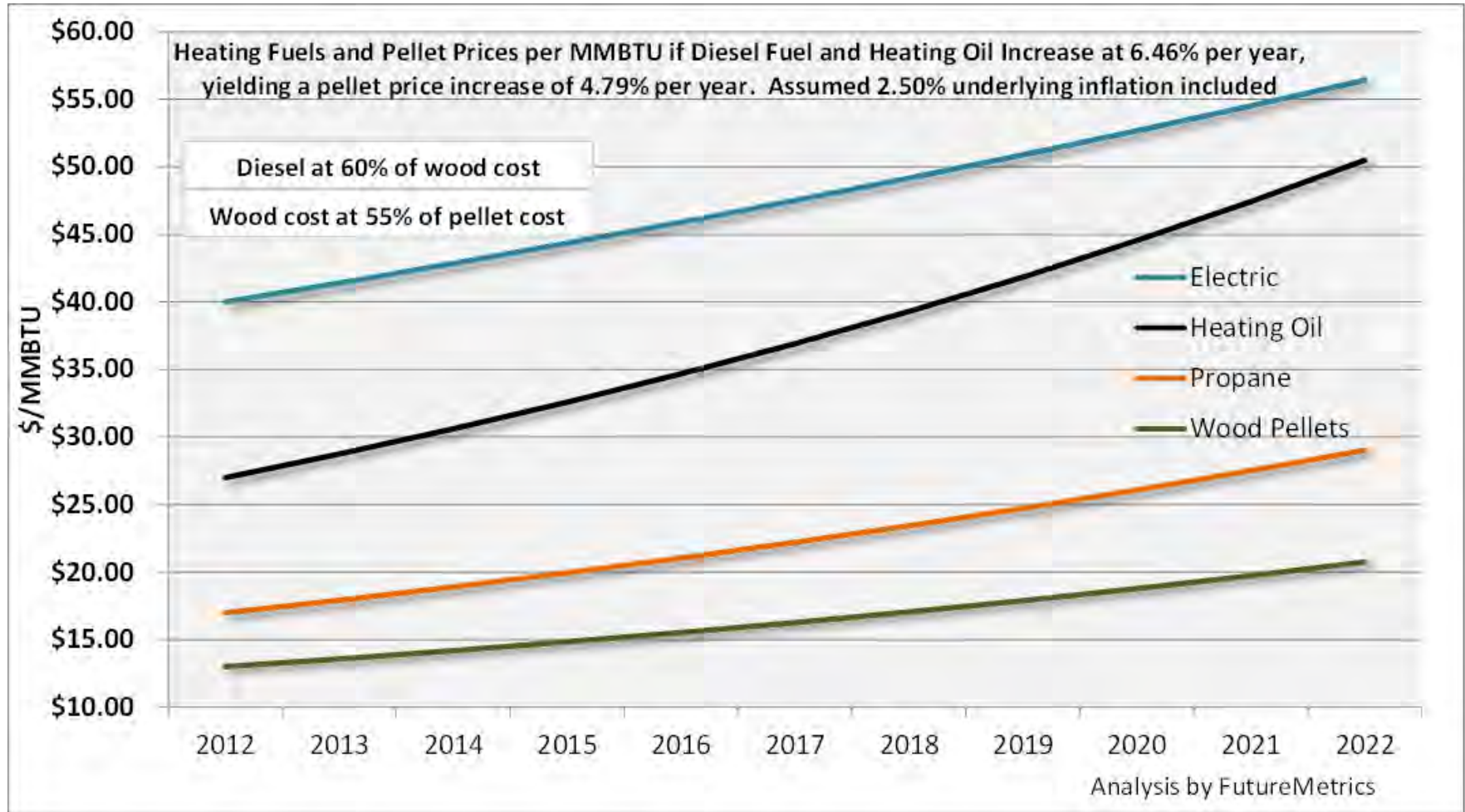
1. Supply Chain from Direct, Indirect, and Induced Jobs
2. Increased Disposable Income from Energy Savings and Increase in Disposable Income
3. No Longer Exporting Money and Jobs through Fossil Fuel Purchase

1. Supply Chain Direct, Indirect, and Induced Jobs

Economic Impact of Producing Heating Fuel Regionally (in 2025 measured in 2013 \$)

	Total Biomass for Pellets Production per Year (green tons)	Direct Jobs	Income at \$48,445 per Year per job	Indirect and Induced Jobs	Multiplier Income at \$48,445 per Year - Tax Rate 35%	Total ANNUAL Income
Wisconsin	1,988,653	716	\$ 34,682,000	957	\$ 16,230,000	\$ 50,912,000
Minnesota	2,524,511	909	\$ 44,028,000	1,095	\$ 18,559,000	\$ 62,587,000
Michigan	2,083,147	750	\$ 36,330,000	814	\$ 13,799,000	\$ 50,129,000
North Dakota	601,434	217	\$ 10,489,000	271	\$ 4,600,000	\$ 15,089,000
South Dakota	424,075	153	\$ 7,396,000	209	\$ 3,550,000	\$ 10,946,000
Iowa	1,138,515	410	\$ 19,856,000	483	\$ 8,185,000	\$ 28,041,000
Illinois	2,335,119	841	\$ 40,725,000	813	\$ 13,793,000	\$ 54,518,000
Indiana	2,308,535	831	\$ 40,261,000	805	\$ 13,653,000	\$ 53,914,000
Ohio	3,856,266	1,388	\$ 67,254,000	1,510	\$ 25,595,000	\$ 92,849,000
TOTAL	17,260,255	6,214	\$ 301,021,000	6,957	\$ 117,964,000	\$ 418,985,000

2. Increased Disposable Income



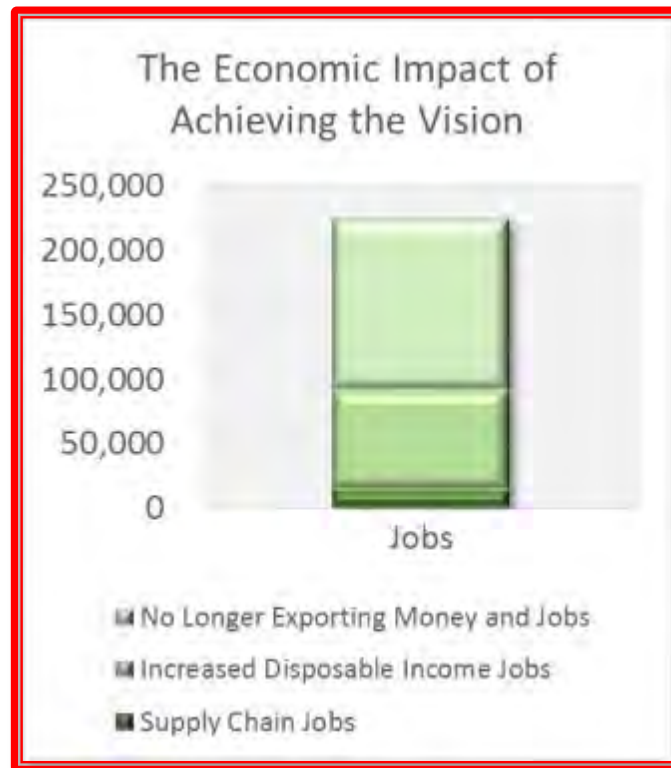
2. Jobs from Annual Savings and the Increase in Disposable Income

	Spending on Propane and Heating Oil by 10.00% of Total Users	Amount that Would be Spent on Biomass Fuel at \$235/ton for equivalent heat	Annual Savings	Total Jobs Due to Heating Cost Savings	Spending on Heating Oil and Propane at \$6.91/gallon and \$2.61/gallon	Amount that Would be Spent on Biomass Fuel at \$323/ton for equivalent heat	Annual Savings (in 2025 dollars)	Total Jobs in 2025 Due to Heating Cost Savings
Wisconsin	\$ 345,034,332	\$ 234,398,374	\$ 110,635,958	5,351	\$ 576,045,149	\$ 321,778,737	\$ 254,266,000	12,299
Minnesota	\$ 430,005,505	\$ 297,476,139	\$ 132,529,366	5,701	\$ 710,503,436	\$ 408,370,991	\$ 302,132,000	12,997
Michigan	\$ 339,554,376	\$ 245,483,791	\$ 94,070,585	4,132	\$ 546,414,364	\$ 336,996,639	\$ 209,418,000	9,199
North Dakota	\$ 100,953,551	\$ 70,258,597	\$ 30,694,953	1,416	\$ 166,226,823	\$ 96,449,998	\$ 69,777,000	3,220
South Dakota	\$ 67,452,626	\$ 49,283,665	\$ 18,168,960	842	\$ 107,828,706	\$ 67,655,911	\$ 40,173,000	1,861
Iowa	\$ 173,272,307	\$ 133,931,592	\$ 39,340,715	1,702	\$ 266,849,600	\$ 183,859,376	\$ 82,990,000	3,590
Illinois	\$ 344,579,797	\$ 274,080,739	\$ 70,499,057	2,751	\$ 519,972,918	\$ 376,254,121	\$ 143,719,000	5,608
Indiana	\$ 371,962,995	\$ 270,790,500	\$ 101,172,495	4,460	\$ 595,971,021	\$ 371,737,327	\$ 224,234,000	9,885
Ohio	\$ 654,759,078	\$ 452,959,788	\$ 201,799,290	8,427	\$1,081,866,556	\$ 621,816,723	\$ 460,050,000	19,212
			\$ 798,911,380	34,783			\$ 1,786,759,000	77,871

Economic Benefits of Achieving the Vision

The significant gap between heating fuel prices and wood and pellet fuel prices in 2025 will unlock and release millions of dollars into the states' economies.

- The **fuel supply chain** would create **13,170 jobs**.
- The direct, indirect and induced job from those **annual energy savings** would create **78,000 new jobs**.
- Using **regionally produced fuel** would also stop the export of **132,900 jobs**.
- The net increase in jobs by 2025 if the 10% goal is reached is 224,000.



**What Needs To Be Done To
Achieve This Vision?**

“Why are we content to provide other nations with renewable energy but so unwilling to use more of it ourselves, creating a few thousand (or significantly more) jobs in the process?”

~Joseph Seymour, BTEC Executive Director

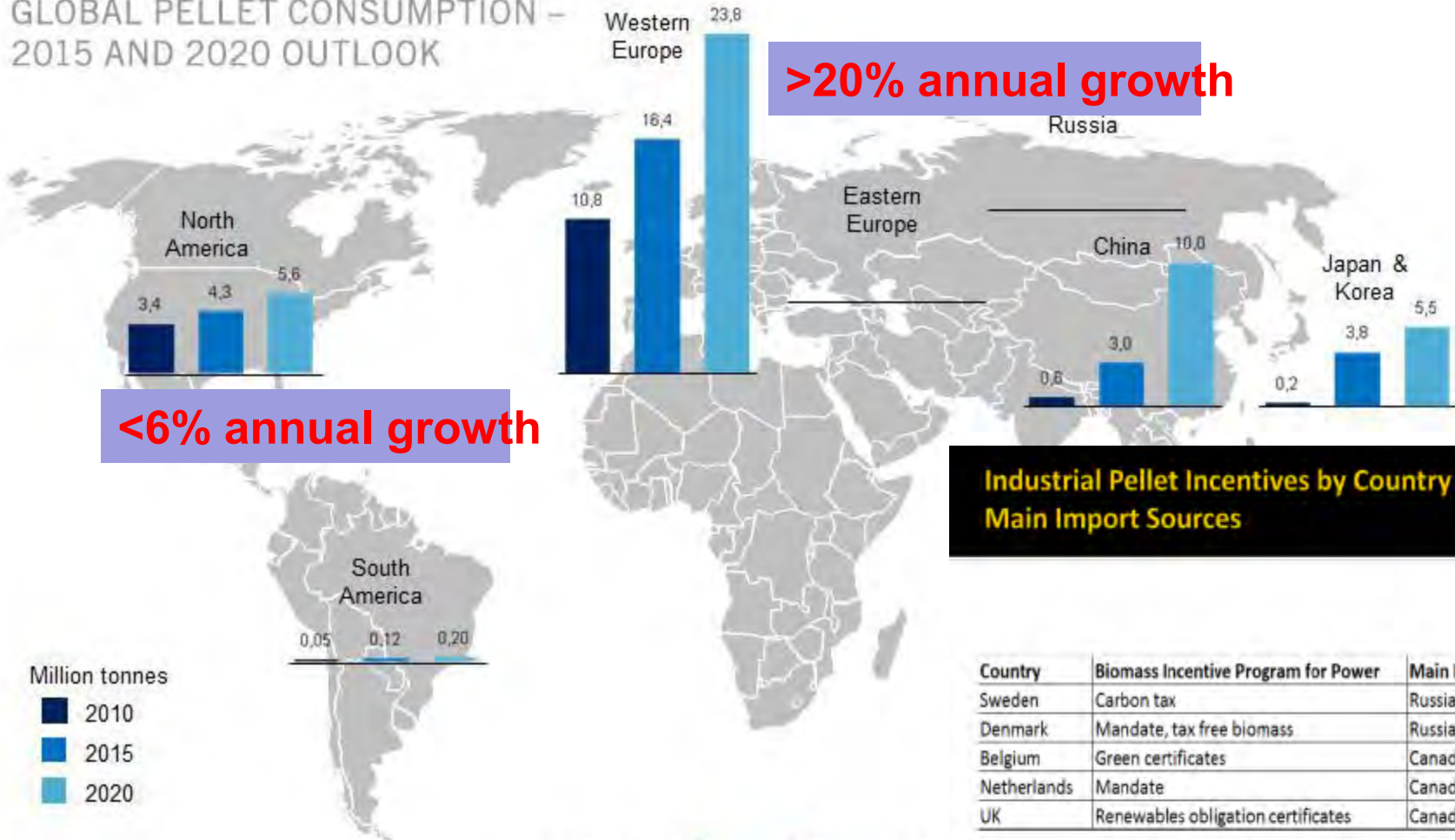


Strategy Summary to Achieve the Vision

- **Develop clean energy policy that includes clean and efficient biomass thermal energy**
- **Increase awareness and recognition of the benefits derived from biomass thermal energy**
- Expand funding opportunities and programs to support the development and installation of biomass thermal/CHP projects
- Support research, technology innovation and demonstrations throughout the biomass thermal supply chain

Don't Think Policy Makes a Difference?

GLOBAL PELLET CONSUMPTION – 2015 AND 2020 OUTLOOK

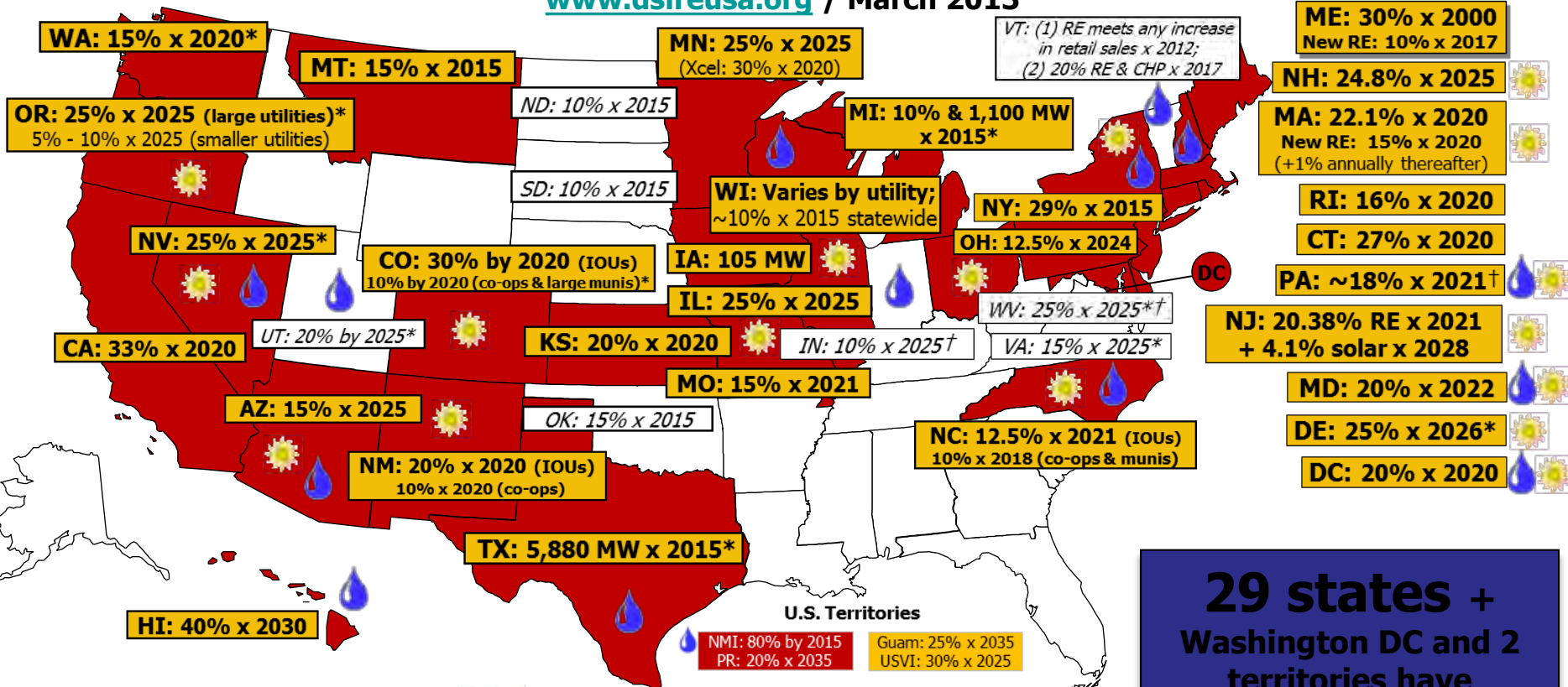


Source: PÖYRY

Renewable Portfolio Standard Policies

(www.dsireusa.org)

www.dsireusa.org / March 2013



29 states + Washington DC and 2 territories have Renewable Portfolio Standards
(8 states and 2 territories have renewable portfolio goals)

State Legislative Landscape needs

Demand side incentives

State	Cost-share and grants	Technical assistance	Financing	Procurement	Rules and regulations	Tax incentives	TOTAL	Harvesting	Transportation	Manufacturing	Consumer markets	TOTAL
	----- Policy instrument -----							--- Supply chain ---				
Michigan	2	1	0	1	0	2	6	0	0	3	3	6
Minnesota	2	1	1	1	3	1	9	2	0	6	1	9
Ohio	2	4	0	2	3	1	12	0	0	10	2	12
Wisconsin	6	3	0	2	3	0	14	2	0	6	6	14
TOTAL	12	9	1	6	9	4	41	4	0	35	12	41

HTM Working Group Recommendations

- **Policy & Regulatory**

- Remove barriers restricting the use of biomass heating in the Low Income Heating Assistance Program. Require energy auditors to provide the same safety, energy and cost savings audit of biomass appliances as for fossil fuel appliances
- Set clear standards for biomass thermal in building certification standards (e.g., LEED, Green Building Standard)
- Develop statewide sustainable harvesting guidelines & assessments for woody and agricultural feedstocks; Develop landowner and industry outreach around the deployment of guidelines & thermal uses
- Establish thermal energy standards for public facilities. Include biomass fuel specifications and qualifying heating technologies in state procurement protocols and contracts, as well as emission & building regulation inclusion of biomass technologies.
- Make sure that renewable energy incentives/credits are technology neutral.

HTM Working Group Recommendations

- **Advocacy & Awareness**
 - Grow and expand stakeholder support for biomass thermal energy in our Midwest region
 - Promote the combination of renewable energy technologies to maximize overall system efficiency
 - Get each state energy office involved
 - Job creation opportunities should elevate interest in states to contribute funds to efficient grass roots efforts
 - Rural area outreach as to the opportunity biomass thermal provides homes, businesses, schools and municipalities

HTM Working Group Recommendations

- **Financing / Incentives**
 - Funding ability for clean, high-efficiency biomass heating, cooling, district energy and CHP systems (ITC, PTC)
 - Master Limited Partnerships Parity Act
 - Develop grant and loan programs encouraging demonstrations and installations
 - Develop wood heat change-out programs; invigorate Fuels For Schools Programs
 - Support Energy Title programs created in the 2008 Farm Bill, and in particular maintain funding for (Renewable Energy for America Program (REAP) and highlight biomass installs.
 - Create a “check-off” program to support biomass thermal market promotion and research. Check-off fees could be levied on a per-unit of feedstock production or consumption

HTM Working Group Recommendations

- **Research and Analysis**
 - Develop and disseminate statewide databases of household, business and public facility energy use by fuel type (propane, natural gas, coal, and heating oil) and location
 - Partner with state agencies to develop strategic biomass energy education and outreach programs to assess the economic opportunities of conversion to biomass fuel
 - Conduct technical assistance and market development toward community scale users in addition to large-scale users
 - Conduct and/or update CHP site potential studies for Midwest States. Look for technology innovation investment opportunities as well as supply chain foundation as market grows

Learn Innovation from States succeeding

Oregon:

Established a thermal tax credit, creating 6 cluster projects to advance wood-to-energy, equipment grants and recent bill (SB5709) creating a densified biomass pilot program with public-private partnership.

Massachusetts:

Creating a biomass thermal pilot program, focus on high efficiency biomass thermal-heat pumps-district energy, wood stove change out program and current legislation (S2395) requiring state to study whether thermal should be added to the RPS.

New Hampshire:

Biomass heating equipment incentive program and authorized 2013-2025 REC's for MWH-BTU conversion useful thermal energy output supported by electric rate payers.

Also Maine, Connecticut, Rhode Island and others in process.

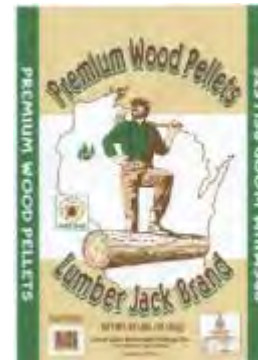
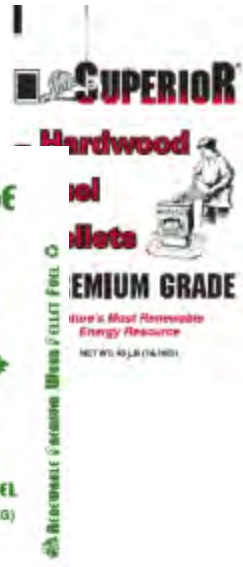
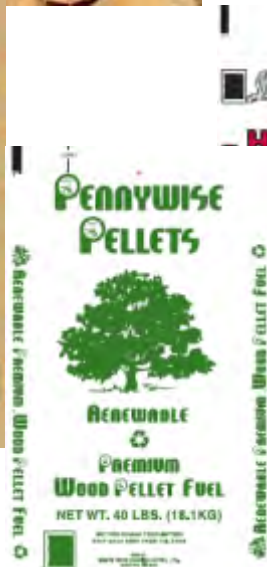
We have Raw Materials and Processing Capabilities



We have Ag Materials and Processing Capabilities



We have many Facilities that Densify Biomass



We need more users that realize that this is Technically and Economically Viable TODAY!



Pellet Stoves



Saint Paul's Community Energy System

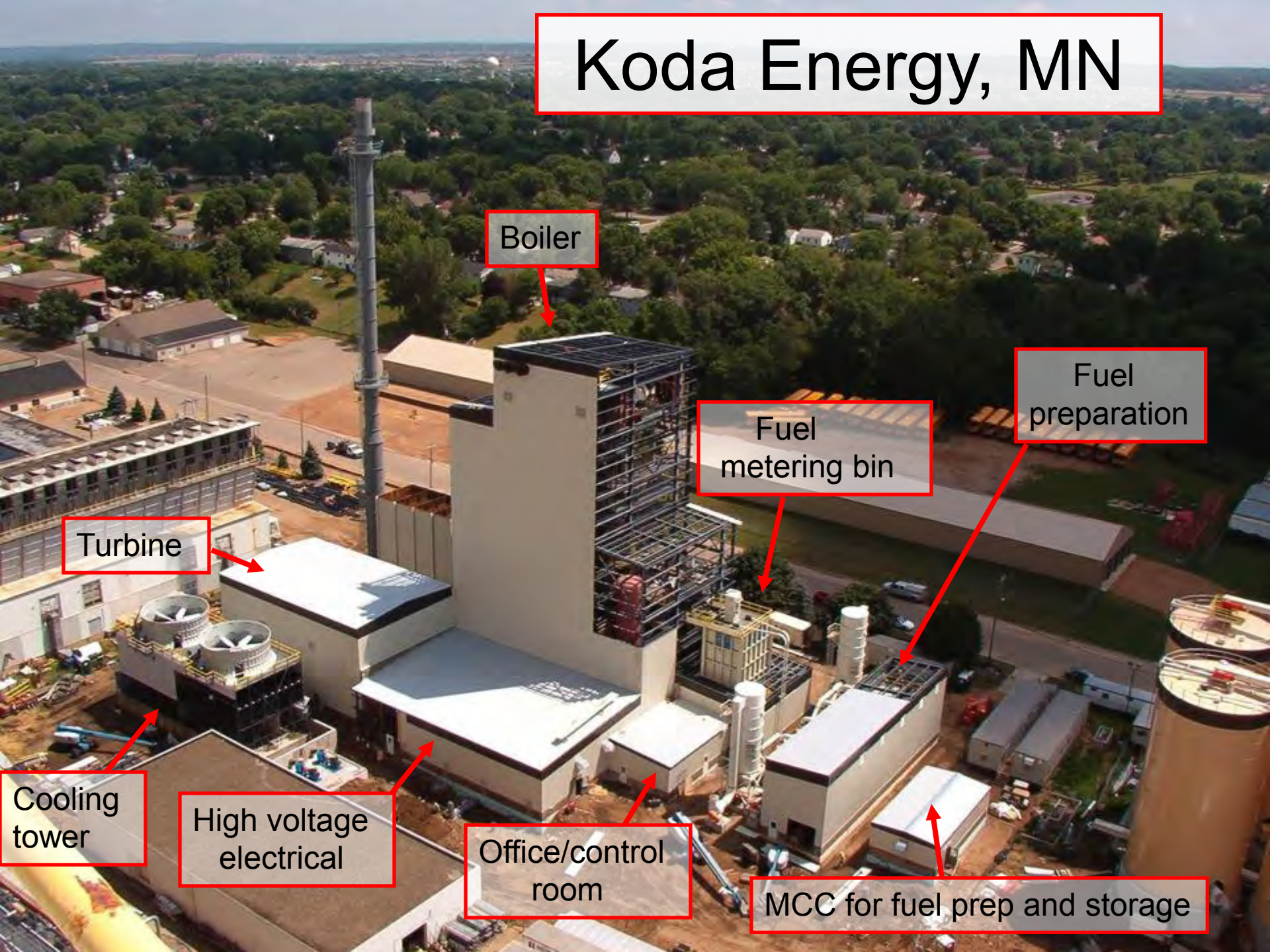
- Serving **Saint Paul** customers since 1983
- **North America's** largest hot water district energy system
- **Minnesota's** leading biomass, renewable energy system
- **A model** for integration of renewable energy, combined heat and power and a district energy system



Biomass Fired CHP in Downtown Saint Paul



Koda Energy, MN



Boiler

Fuel preparation

Fuel metering bin

Turbine

Cooling tower

High voltage electrical

Office/control room

MCC for fuel prep and storage

Gundersen Health, Biomass Boiler Project

2013 Implementation

Benefits:

- 38% of energy independence goal (~150,000 MMBtu and 2,200,000 kWh)
- Will produce the majority (80%) heat / steam used by the health system
- Projected annual savings of \$500,000...helping to control the cost of care
- On-site electricity production with back pressure steam turbine



Biomass heat & power: Eastern Illinois University Renewable Energy Center



EIU Renewable Energy Center



- 100% biomass-fired plant
- Meets 100% of heating needs
- Meets 10% of electricity needs
- Chiptec gasifier
- 27,000 green t/yr wood
- Grass & stover in future



The Barron, WI Story with Biomass: Heating and Cooling our School System



Loading Chips of Shavings

Winter – Daily

Other Seasons - 3 or 4 Times/Wk.

Finland, MN's Wolf Ridge Environmental Learning Center embraces pellets with new biomass boiler

BY LAREESA SANDRETSKY - [LAKE COUNTY NEWS CHRONICLE](#)

July 7, 2012



Flower Farm, Eau Claire, WI



My Family's Successful Transition from Propane to Wood Pellets

Tim Hagen

Research
Engineer and
Homeowner

University of
Minnesota
Duluth NRRI



Committed Organizations



Agricultural Utilization Research Institute



Northeast

BIOMASS THERMAL WORKING GROUP

HEATING THE MIDWEST

WITH RENEWABLE BIOMASS



Heating the Midwest

13 Steering Committee Organizations

+ Action Team Organizations

100+ Conference/Expo Organizations

A Call to Action

- Contact HTM or BTEC to offer feedback, criticism, or ideas to improve the Vision.
- Share the Vision Document with anyone interested and invite their feedback.
- Raise these issues with your governor, state and federal officials, and state legislators.
- Join and engage in national organizations like or state organizations.
- **Get involved! Heating the Midwest needs you!**