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

<table>
<thead>
<tr>
<th></th>
<th>Total Biomass for Pellets Production per Year (green tons)</th>
<th>Direct Jobs</th>
<th>Income at $48,445 per Year per job</th>
<th>Indirect and Induced Jobs</th>
<th>Multiplier Income at $48,445 per Year - Tax Rate 35%</th>
<th>Total ANNUAL Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wisconsin</td>
<td>1,988,653</td>
<td>716</td>
<td>$34,682,000</td>
<td>957</td>
<td>$16,230,000</td>
<td>$50,912,000</td>
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<tr>
<td>Minnesota</td>
<td>2,524,511</td>
<td>909</td>
<td>$44,028,000</td>
<td>1,095</td>
<td>$18,559,000</td>
<td>$62,587,000</td>
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<tr>
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<td>750</td>
<td>$36,330,000</td>
<td>814</td>
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<tr>
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<td>$10,489,000</td>
<td>271</td>
<td>$4,600,000</td>
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<tr>
<td>South Dakota</td>
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<td>$7,396,000</td>
<td>209</td>
<td>$3,550,000</td>
<td>$10,946,000</td>
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<tr>
<td>Iowa</td>
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<td>410</td>
<td>$19,856,000</td>
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<td>$40,725,000</td>
<td>813</td>
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<td>$40,261,000</td>
<td>805</td>
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<tr>
<td>Ohio</td>
<td>3,856,266</td>
<td>1,388</td>
<td>$67,254,000</td>
<td>1,510</td>
<td>$25,595,000</td>
<td>$92,849,000</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>17,260,255</strong></td>
<td><strong>6,214</strong></td>
<td><strong>$301,021,000</strong></td>
<td><strong>6,957</strong></td>
<td><strong>$117,964,000</strong></td>
<td><strong>$418,985,000</strong></td>
</tr>
</tbody>
</table>
2. Increased Disposable Income

Heating Fuels and Pellet Prices per MMBTU if Diesel Fuel and Heating Oil Increase at 6.46% per year, yielding a pellet price increase of 4.79% per year. Assumed 2.50% underlying inflation included.

- Diesel at 60% of wood cost
- Wood cost at 55% of pellet cost

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

<table>
<thead>
<tr>
<th></th>
<th>Spending on Propane and Heating Oil by 10.00% of Total Users</th>
<th>Amount that Would be Spent on Biomass Fuel at $235/ton for equivalent heat</th>
<th>Annual Savings</th>
<th>Total Jobs Due to Heating Cost Savings</th>
<th>Spending on Heating Oil and Propane at $6.91/gallon and $2.61/gallon</th>
<th>Amount that Would be Spent on Biomass Fuel at $325/ton for equivalent heat</th>
<th>Annual Savings (in 2025 dollars)</th>
<th>Total Jobs in 2025 Due to Heating Cost Savings</th>
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<tbody>
<tr>
<td>Wisconsin</td>
<td>$345,034,332</td>
<td>$234,398,374</td>
<td>$110,635,958</td>
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<td>$576,045,149</td>
<td>$321,778,737</td>
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<td>5,701</td>
<td>$710,503,436</td>
<td>$408,370,991</td>
<td>$302,132,000</td>
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<tr>
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<td>$245,483,791</td>
<td>$94,070,585</td>
<td>4,132</td>
<td>$546,414,364</td>
<td>$336,996,639</td>
<td>$209,418,000</td>
<td>9,199</td>
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<tr>
<td>North Dakota</td>
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<td>$70,258,597</td>
<td>$30,694,953</td>
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<td>$96,449,998</td>
<td>$69,777,000</td>
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<td>$107,828,706</td>
<td>$67,655,911</td>
<td>$40,173,000</td>
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<td>Iowa</td>
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<td>$266,849,600</td>
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<td>$82,990,000</td>
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<tr>
<td>Illinois</td>
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<td>$1,081,866,556</td>
<td>$621,816,723</td>
<td>$460,050,000</td>
<td>19,212</td>
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</table>

| Total     | $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?

>20% annual growth

<6% annual growth

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)

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

<table>
<thead>
<tr>
<th>State</th>
<th>Cost-share and grants</th>
<th>State Legislative Landscape needs</th>
<th>Tax incentives</th>
<th>TOTAL</th>
<th>Harvesting</th>
<th>Transportation</th>
<th>Manufacturing</th>
<th>Consumer markets</th>
<th>TOTAL</th>
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<td>6</td>
<td>9</td>
<td>4</td>
<td>41</td>
<td>41</td>
</tr>
</tbody>
</table>
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; envigorate 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
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!
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

- Cooling tower
- High voltage electrical
- Office/control room
- Boiler
- Fuel metering bin
- Fuel preparation
- MCC for fuel prep and storage
- Turbine
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

Iutzi, 2013
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

Illinois Biomass Working Group

Michigan Biomass

Minnesota’s Renewable Energy Roundtable

RENEW Wisconsin

Agricultural Utilization Research Institute (AURI)

Clean Energy Resource Teams

Biomass Thermal Energy Council (BTEC)

Pellet Fuels Institute

Northeast BIOMASS THERMAL WORKING GROUP
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!**