URBAN BIOMASS RESOURCES IN MICHIGAN

PROCUREMENT AND HANDLING

Project Development Conference
Oakland University
May 22, 2008

Controlled Performance, L.L.C.
E.P. (Ted) Barrett, Jr.

BIOMASS

• What is Biomass?

• Why Biomass?
Forest vs. Urban Wood Waste

- Forest

- Urban

Forest Wood Waste
Log vs. Wood Waste

Urban Wood Waste
Pre-Procurement
Initial Work

• Feasibility Study

Pre-Procurement
Detailed Work

• Fuel Risks
• Wood Specifications
• Processing Equipment
• Volumes and Burn Rates
• Volumes and Price Variables
• Transportation Infrastructure
• Economics – Price Ranges
• Competition
Pre-Procurement
Detailed Work

- Fuel Risks
- Wood Specifications
- Processing Equipment
- Volumes and Burn Rates
- Volumes and Price Variables
- Transportation Infrastructure
- Economics – Price Ranges
- Competition

IX  BOILER-READY WOOD WASTE FUEL PROTOCOL

A  Scope

B  Significance and Use

C  Apparatus

D  Procedure
  a  Collection of Core Sample
  b  Preparation of Core Sample

E  Inspection
  a  Visual Observations of Painted Wood and Painted Wood & Non-wood Materials
  b  Recording Results

F  Calculations

G  Frequency of Sampling and Inspection

H  Wood Waste Fuel Load Rejection Criteria

I  Re-inspection

J  Records
Wood Chips

Testing for Moisture Content
Pre-Procurement Detailed Work

- Fuel Risks
- Wood Specifications
- Processing Equipment
- Volumes and Burn Rates
- Volumes and Price Variables
- Transportation Infrastructure
- Economics – Price Ranges
- Competition

Wood Chipper
Wood Grinder

Tub Grinder
Pre-Procurement Detailed Work

- Fuel Risks
- Wood Specifications
- Processing Equipment
  - Volumes and Burn Rates
- Volumes and Price Variables
- Transportation Infrastructure
- Economics – Price Ranges
- Competition

Wood Inventory
Boiler Fire

Pre-Procurement Detailed Work

- Fuel Risks
- Wood Specifications
- Processing Equipment
- Volumes and Burn Rates
- **Volumes and Price Variables**
- Transportation Infrastructure
- Economics – Price Ranges
- Competition
Wood Sources

Wood Types
Source Proximity

Processing
Transportation

Pre-Procurement Detailed Work

• Fuel Risks
• Wood Specifications
• Processing Equipment
• Volumes and Burn Rates
• Volumes and Price Variables
• Transportation Infrastructure
• Economics – Price Ranges
• Competition
Limits and Restrictions

Traffic Congestion
Pre-Procurement Detailed Work

- Fuel Risks
- Wood Specifications
- Processing Equipment
- Volumes and Burn Rates
- Volumes and Price Variables
- Transportation Infrastructure
- Economics – Price Ranges
- Competition
Competition

Alternative Wood Uses
Facility Review

- Plant Unloading Equipment
- Mobile Equipment
- Logistics and Routing

Unloading & Storage
Facility Review

• Plant Unloading Equipment

• Mobile Equipment

• Logistics and Routing

Mobile Equipment
Facility Review

- Plant Unloading Equipment
- Mobile Equipment
- Logistics and Routing

Strategy and Implementation

- Schedule
- Required Reserves
- Wood Supply Contracts
- Establish Wood Receiving Yards
- Pricing/Receiving Methods
Strategy and Implementation

- Schedule
- Required Reserves
- Wood Supply Contracts
- Establish Wood Receiving Yards
- Pricing/Receiving Methods

Wood Reserves
Strategy and Implementation

- Schedule
- Required Reserves
- Wood Supply Contracts
- Establish Wood Receiving Yards
- Pricing/Receiving Methods
Yard Locations

Wood Collection Yards
Yard Equipment

Strategy and Implementation

- Schedule
- Required Reserves
- Wood Supply Contracts
- Establish Wood Receiving Yards
- Pricing/Receiving Methods
Attracting Wood

Pricing & Receiving Methods
Receiving & Inspections

Testing for Moisture Content
Operations

- Wood Receiving Procedures
- Wood Storage and Feed System
- Account Management

Operations

- Wood Receiving Procedures
- Wood Storage and Feed System
- Account Management
Storage

Wood Feed
Wood Feed

Operations

• Wood Receiving Procedures

• Wood Storage and Feed System

• Account Management
## Scale House Daily Report

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<th>Date</th>
<th>In Inches</th>
<th>Out Inches</th>
<th>In Tons</th>
<th>Out Tons</th>
<th>In Moist</th>
<th>Out Moist</th>
<th>In Bone Dry</th>
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<th>Date</th>
<th>In Inches</th>
<th>Out Inches</th>
<th>In Tons</th>
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<th>Out Moist</th>
<th>In Bone Dry</th>
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**Scale House Report Reflects, on a Daily Basis, All Material Going into the Storage Pile**
Boiler Controls

MIS-USES

Dropping off at Landfill
Open Burning
Green Uses