Waste to Wisdom

USDOE - BioMass Research & Development Imitative

Humboldt State University

Schatz Energy Center

Goal: *Investigate methods to better utilize existing forest residues & convert them to useful products*

3 Teams

- Feedstock Development
- Sustainability Analysis
- Biomass Conversion Technologies (BCT)
  - BioChar
  - Briquetting
  - Biomass Gasification
  - Dryer
  - Torrefaction

BCT Testing - Schedule 2015

BCT

 Biomass Gasifier				Humboldt (Field)	Humboldt (Lab)		
 Briquetter		Oregon (Industry)		Humboldt (Field)	Humboldt (Field)		
 Torrefier				Humboldt (Field)	Humboldt (Field)		
 Biochar Machine	Mendocino (Field)					Mendocino (Field)	Mendocino (Field)	Mendocino (Field)
 Belt Dryer				Humboldt (Field)	Humboldt (Field)	Mendocino (Field)	Mendocino (Field)	Mendocino (Field)

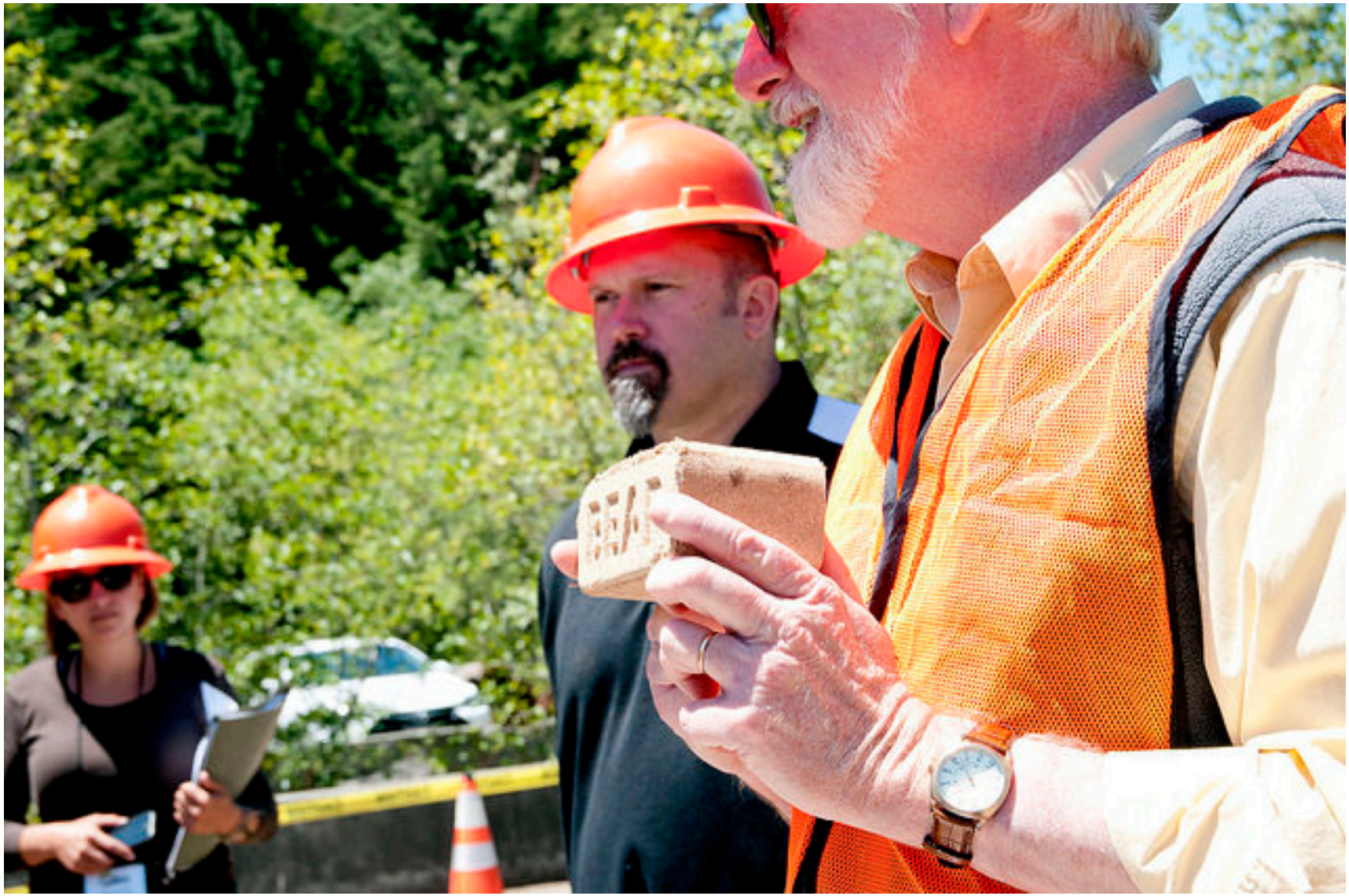
BCT Testing Objectives

Goal: To assess the potential for operation of each BCT at a forest operations site by answering key questions such as:

- What quality of feedstock is acceptable?
- What are the yield rates and how do they change with feedstock variations?
- How much labor is required for operation?
- Is stand-alone operation possible?
- What are the emissions during operation?


TL240
CAUTION

RUF Briquetter



Gasifier –All Power Labs

Briquetter Durability Tester

Biochar Machine Throughput

Produced by Biochar Solutions Inc., Pueblo, CO

Currently in operation by Redwood Forest Foundation Inc., in Branscomb, CA

Measured biomass input rate: 200-500 kg/hr (DAF)

Measured biochar output rate: 17-46 kg/hr(DAF)

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Waste? Or Wisdom?
Or
A Cook Book?

Biomass Dryer

- Necessary to manage moisture content during BCT testing and use
- Configured to use process heat from torrefier
- Manufacturer: Norris Thermal Technologies