Woody Biomass Utilization Technologies

- Content based on SBUG request
- Many other technologies exist

1. Basics (Gareth)
2. Heat (Jim)
3. Electricity (Gareth)
4. Gasification (Rob)
5. Grants (Gareth)

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Yreka, October 21 2010

Woody Biomass Utilization:

The basics

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In partnership with:
USDA Forest Service Region 5

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Making a Difference for California

Purpose:

Interested in alternatives for woody biomass utilization based on challenges and opportunities that will work today

Outline:

- Logic of utilization
- Key criteria
- Screening vendors and developers

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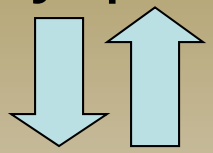
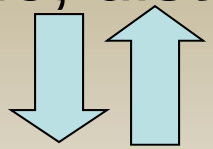
Overview: Value chain considerations

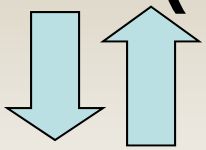
Resource : quality, price, availability



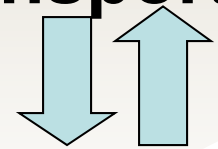
Transport: mode, distance, terrain



Process – Product (technology)



Transport



Market

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Woody biomass in California








Key criteria: Raw material form is important

Every process has a raw material specification

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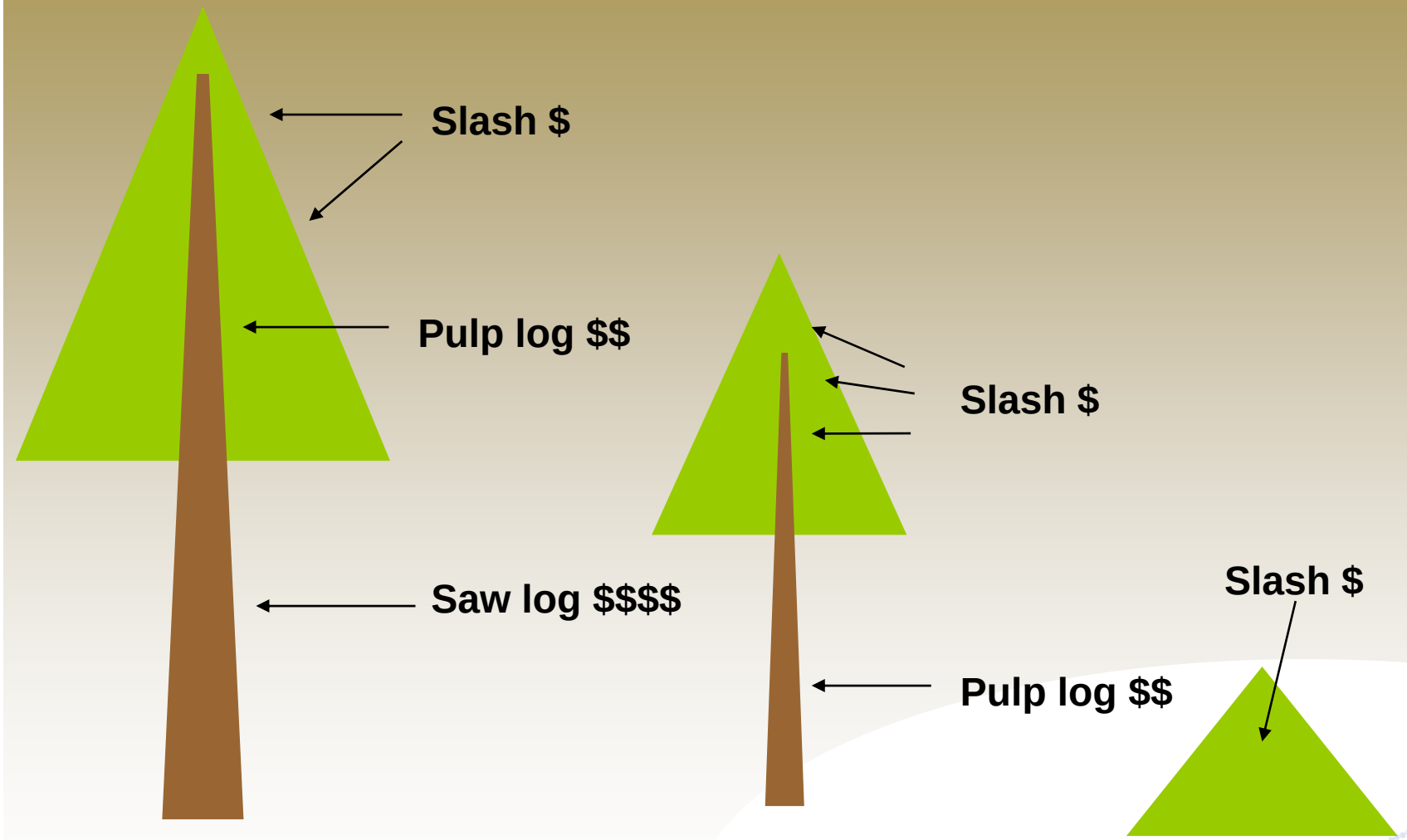
Value helps to move residuals



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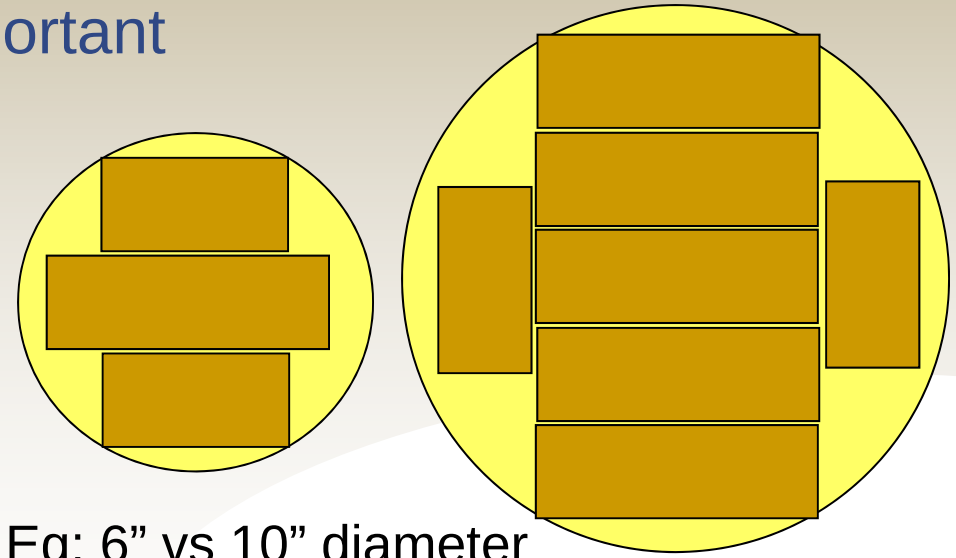
Processing small logs

- More logs to process for same output
- Higher transportation costs
- More handling in mill
- Less valuable products
- Defects have a greater impact (knots, juvenile wood etc)
- Efficiency is very important
  - Speed and volume



Eg: 6” vs 10” diameter

It behaves badly…

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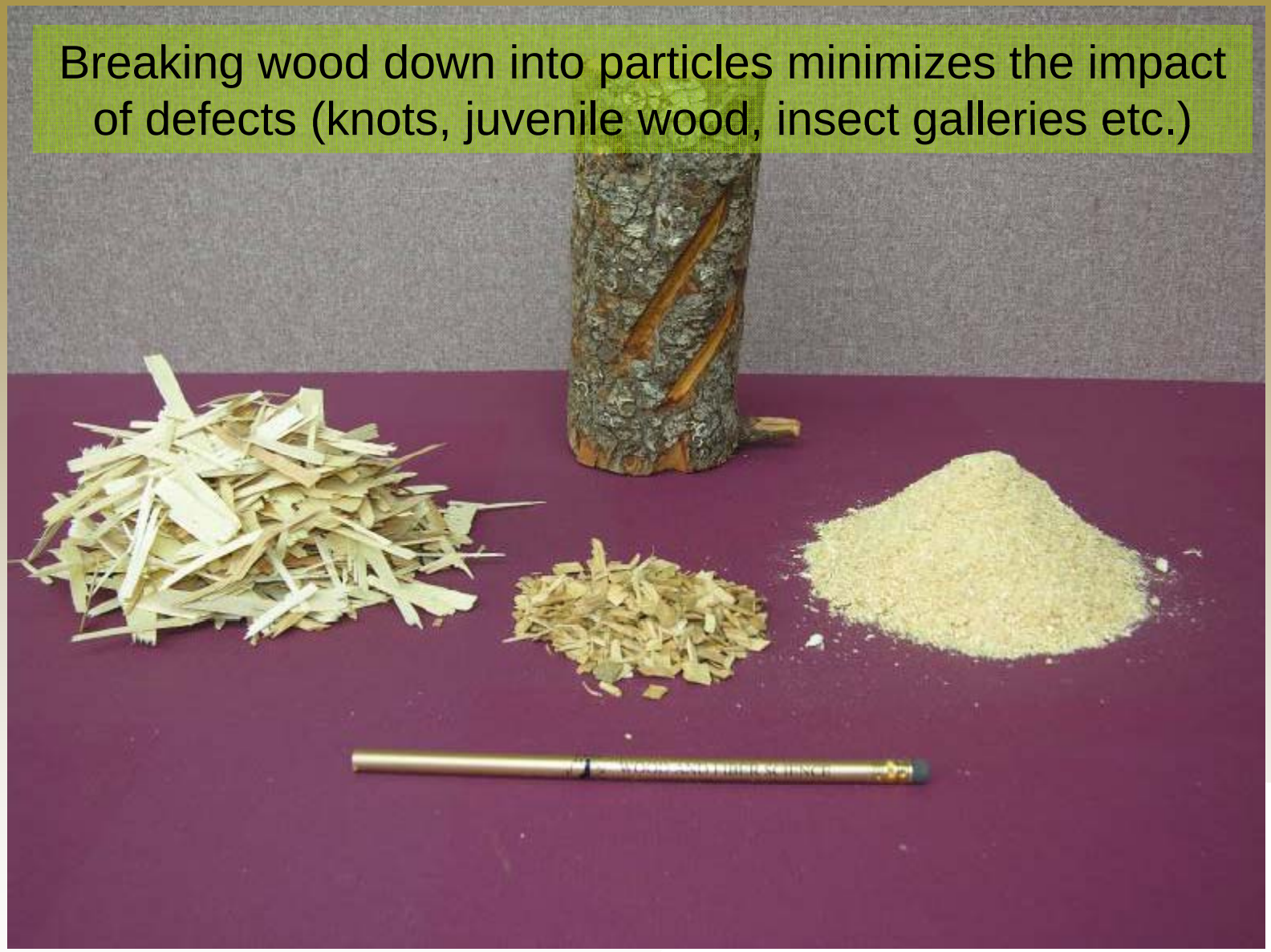
Post and Pole

- Low tech
- Low investment (~$750k)
- 10-20,000 tons/yr
- Need to treat poles

Breaking wood down into particles minimizes the impact of defects (knots, juvenile wood, insect galleries etc.)



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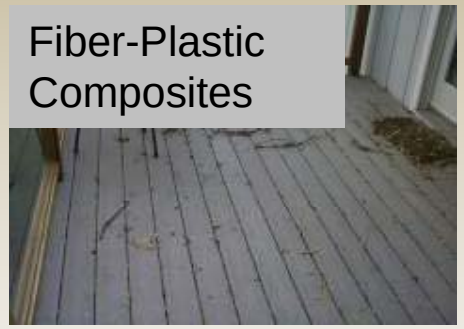
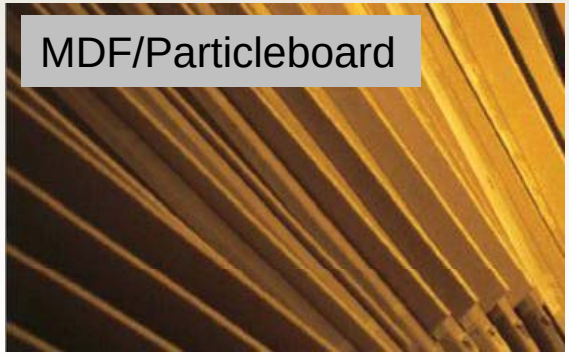
Creating uniformity





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Leverage existing industry

- Existing infrastructure is an important opportunity:
  - Contractors
  - Primary processing (sawmills, veneer etc)
  - Powerplants
  - Panelboard
  - Pulp

  - What do they pay?
  - Feedstock specification?
  - Opportunity to adapt to changing feedstock?

Infrastructure is difficult to bring back

…when it is gone it is gone

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Scale

Scale of markets vs biomass availability

- **Bulk (100,000+ ton/yr)**
  - A monster to feed?
  - Long term (~10+ years) supply commitments required
- **Small-medium markets (<60,000 ton/yr)**
  - Less risk
  - Less controversial
  - Socially acceptable

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Technology

- Wood technology can do almost anything
- There are many existing proven technologies
- Even more “emerging technologies”
  - Carry out due diligence
  - Silver bullets do not exist

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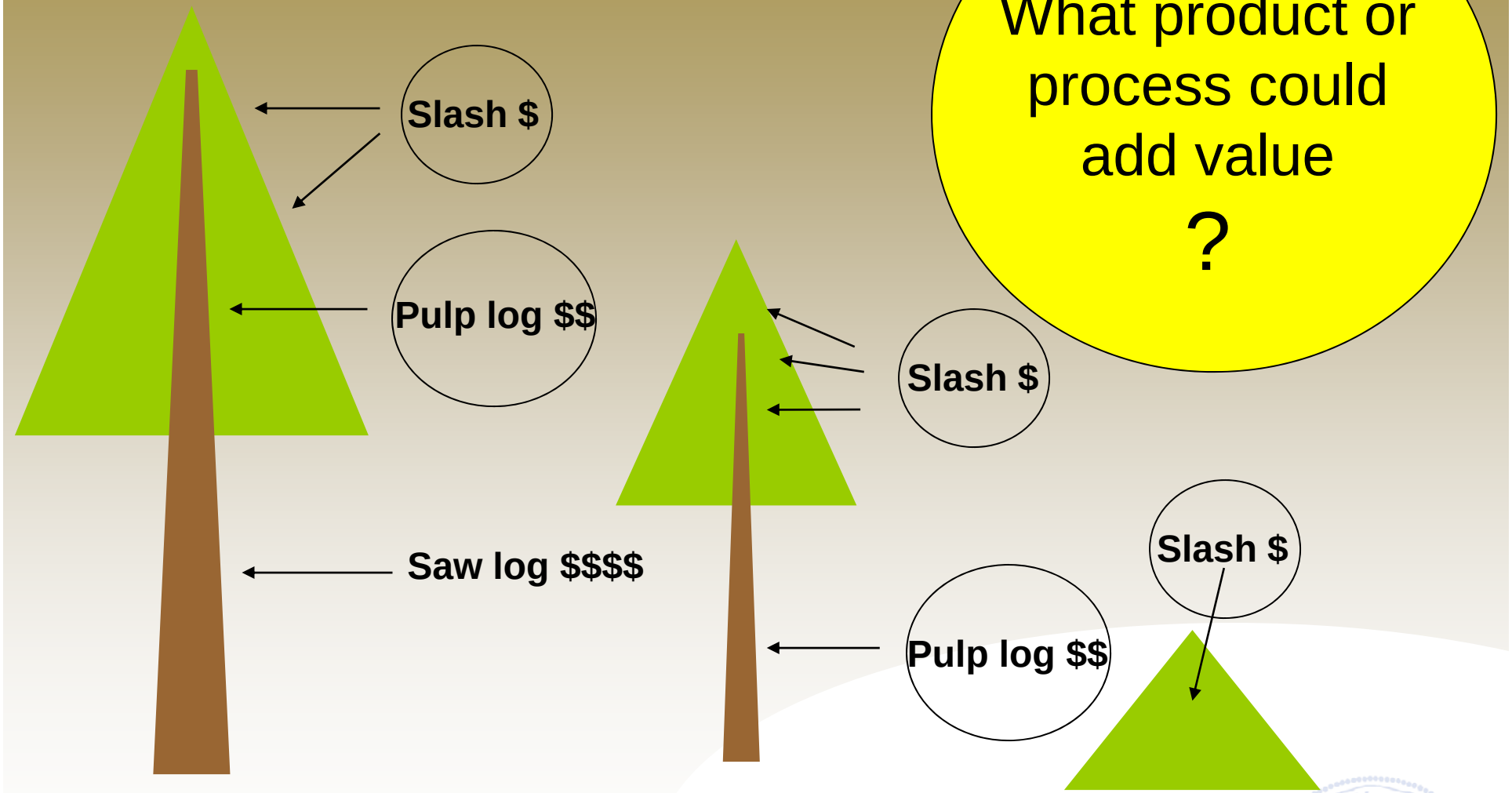
Value helps to move residuals



What product or process could add value

?

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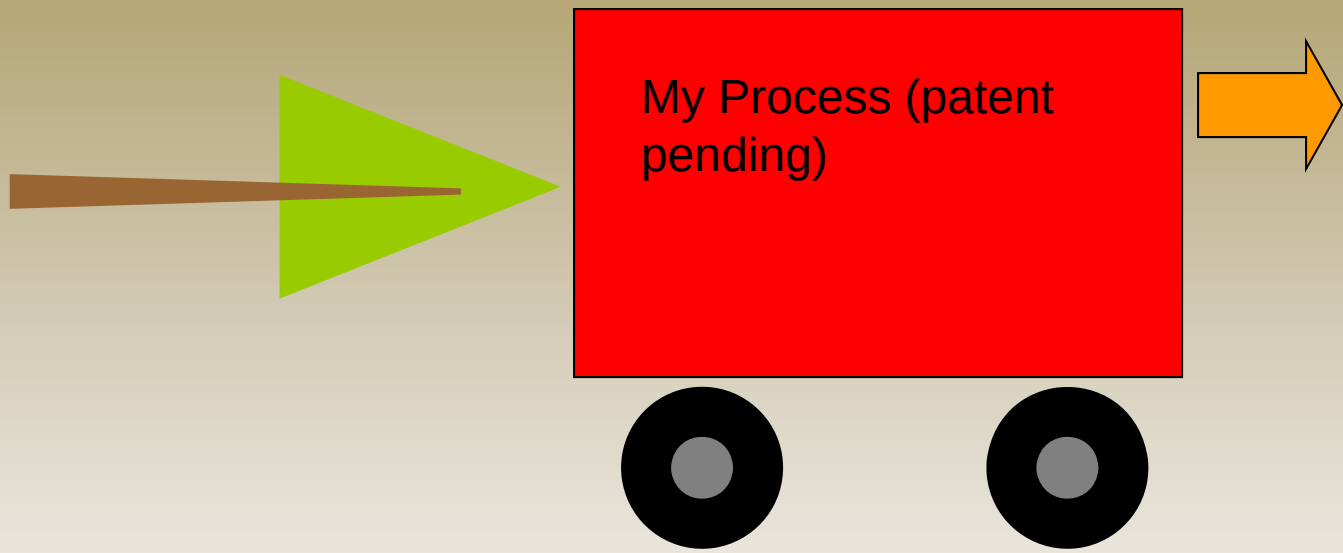
Technology – black boxes



- Gold
- Liquids (oil)
- Char
- Syngas
- H2
- Pellets
- etc….

Key questions to ask for any technology

- *Is the technology commercially deployed (proven)?*
- *What is the feedstock specification?*
- *What are the markets for the output products?*
- *Do the economics work?*
- *Is the process a net energy user?*
- *Permitting requirements?*
- Do not rely on technology vendors for balanced information – carry out due diligence

Key Questions to ask Project Developers

- *Track record of success?*
- *Evidence of financial capabilities?*
- *Enough capacity to deliver a project?*
- *Why do they want to invest here?*
- *What do they need from you?*
- *How many other communities have they approached?*

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Conclusions

- There are many technology options to utilize woody biomass
- There are fewer proven technologies
- Key challenges:
  - Supply of raw material
  - Markets
  - Finance
- Value your time
- Silver bullets do not exist
- Carry out due diligence on projects and technologies

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Thank you

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Help with:

- Grants
- Technology
- Markets
- Networks
- Healthy skepticism