Use of Mobile Fast Pyrolysis Plants to Address WBUG Objectives

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The Concept

- Utilize relatively small mobile fast pyrolysis units that can convert wood to bio-oil and char cost effectively
- Make plants energy self-sufficient
- These features allow plants to be operated in remote areas close to the biomass resource
Fast Pyrolysis Products

- **Bio-oil**
  - 120 gal/dry ton
  - 80,000 Btu/gal

- **Char**
  - 12,000 Btu/lb

- **Syngas**
  - 300 Btu/cf
Bio-oil Uses

- “As is” for fueling boilers, certain combustion turbines and internal combustion engines
- In blends with petroleum-based fuels
- Upgraded into Green Diesel, Green Gasoline, and chemicals
FAST PYROLYSIS PROCESS for energy and char production. Solar energy is converted to CO₂ which is then used in the process.

Biomass undergoes pyrolysis to produce bio-oil and syngas. The char produced is used to generate energy.

Nutrients cycle back into the system, completing the energy conversion process.
Establish Distributed Production

Create networks for distributed, *local* production of biofuels using renewable oil wells
Distributed, local production with many small plants (the personal computer model)
Some Advantages of Fast Pyrolysis Plants

- The fast reactions means that small plants can process large quantities of materials.
- Simplicity of design means small plants can be made modular and transportable.
- Small plants can be factory fabricated which reduces costs for plants and their installation, making them cost effective at a small scale.
- Smaller plants, especially mobile plants, can be located close to the biomass sources.
- This minimizes transportation of low density, low value biomass feedstocks (bio-oil has ~ 6x the energy density of green whole tree chips).
Additional Advantages of the ROI Fast Pyrolysis Process

- Does not require process water
- Relatively easy to scale up
- Relatively simple to construct and operate
- Process can handle dirt, twigs, leaves, small stones in feedstock
- Relatively low capital and O&M costs
- Can be cost effective at small or large scale
WRAP UP

- Addresses Global Climate Change through carbon sequestration and reduction in fossil fuel use
- Addresses sustainably through nutrient recycle and soil productivity enhancement
- Can reduce wildfires and mitigate the cost of forest fuel reduction activities
- Can mitigate the cost of storm damage cleanup and provide a means to recover value from downed and damaged wood
- Can provide markets for unmerchantable wood