



# Woody Biomass Utilization Group Quarterly Meeting

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ADAGE™

[www.adagebiopower.com](http://www.adagebiopower.com)

# ADAGE Is The First Biopower Partnership In The United States Between Major Energy Companies

- Joint Venture between AREVA, a global energy firm, and Duke Energy, a major U.S. utility
- Launch: September 2008 at the Clinton Global Initiative

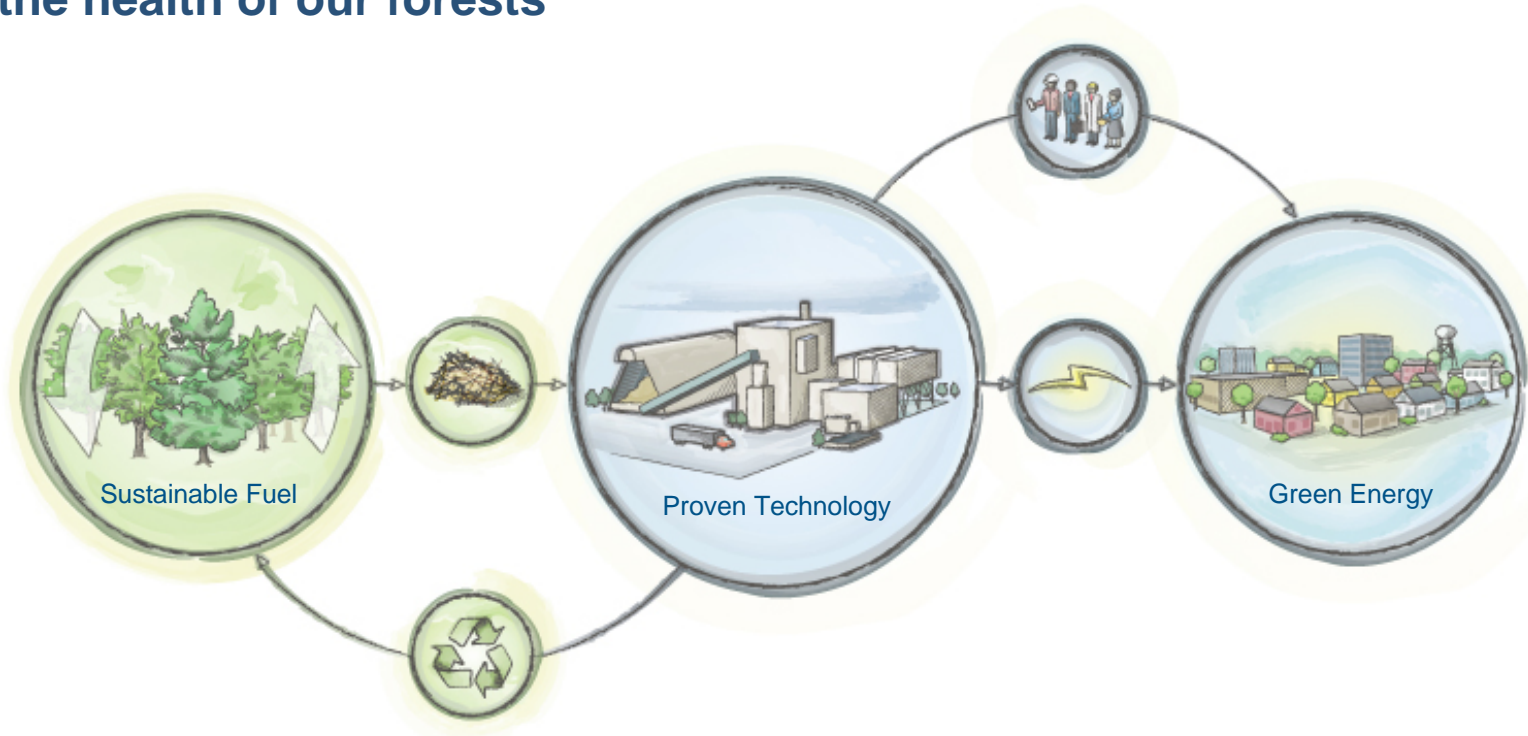


- Plan to develop, own and operate twelve 50 MW biopower energy plants in the continental U.S. that utilize wood to produce green electricity for sale to utilities and municipal electric companies



# Wood Biopower Conceptual Diagram

- A sustainable, natural resource that creates local investment opportunities, generates hundreds of green jobs, and contributes to the health of our forests



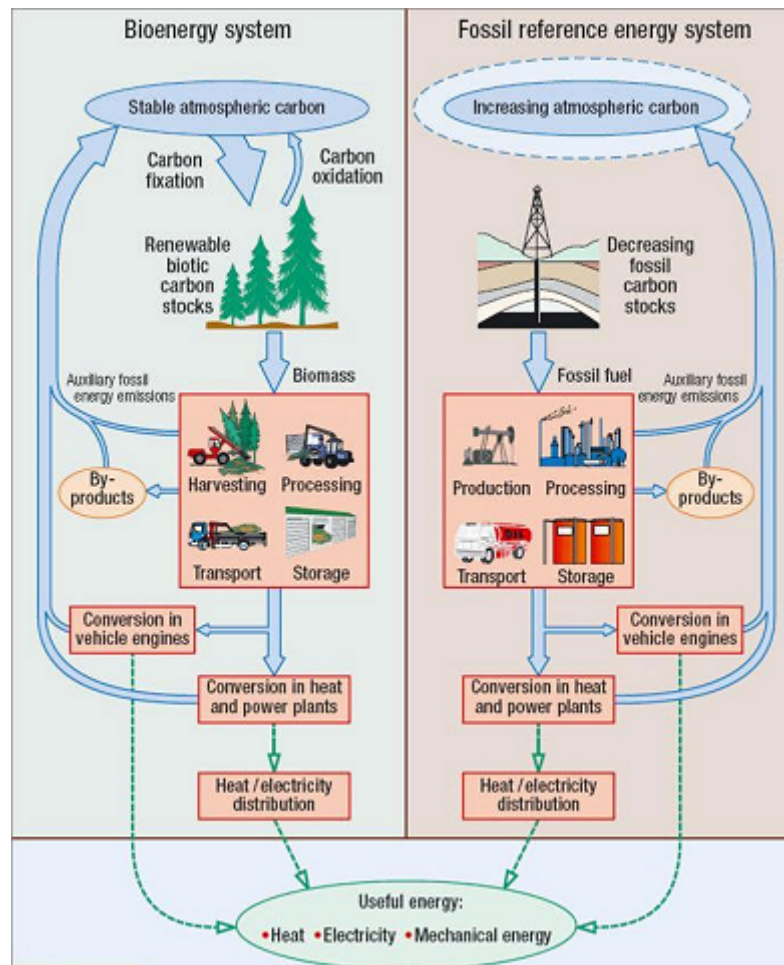
# Biopower is a Recognized Carbon Neutral Resource

• “It is assumed that the CO<sub>2</sub> released during the consumption of biomass is recycled as U.S. forests and crops regenerate, causing no net addition of CO<sub>2</sub> to the atmosphere.” – **2009 U.S. EPA Greenhouse Gas Inventory Report**

## Inventory Report

• “All of the alternative disposal options for the biomass residues produce higher levels of biogenic greenhouse-gas levels than use of the biomass for electricity production.” – **Dr. Gregory Morris, Bioenergy and Greenhouse Gases, Pacific Institute, May, 2008**

• “Biomass from forestry can contribute 12-74 EJ/yr to energy consumption, with a mitigation potential roughly equal to 0.4-4.4 GtCO<sub>2</sub>/yr depending on the assumption whether biomass replaces coal or gas in power plants”, **IPCC AR4 – Mitigation of Climate Change, 2007**

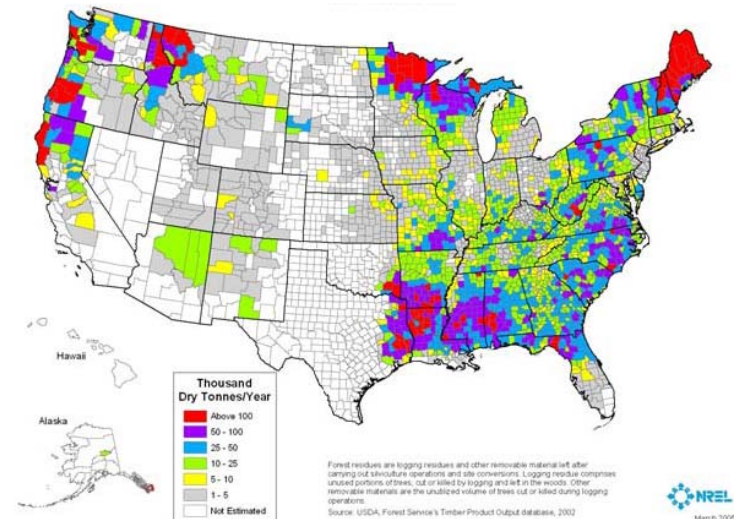


Source: [www.ieabioenergy-task38.org/softwaretools/](http://www.ieabioenergy-task38.org/softwaretools/)

# Our Nation Has the Resources To Sustainably Meet The Demand For Wood Biomass

## Biomass Feedstock:

- **One third of U.S. Land is Forested**
  - 750 million acres in total
  - 20 billion bone dry tons
- **According to USFS, on average, the volume of logging residues left on the site after harvesting operations is equivalent to 30% of the harvested volume removed**
- **The 2005 “Billion Ton Study” identified Sustainable Wood Biomass Resources of over 200 million bdt/year**
  - The majority from sources not utilized - logging residues and fuel treatment



**An ADAGE 50 MW Reference Plant will utilize ~330,000 BDT/yr**

**Overall Potential: 200 million BDT = ~600 Reference Plants = ~30,000 MW**

# Sustainable Forest Management is Key to the Viability of the Biopower Industry

*“In the long term, a sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber, fiber or energy from the forest, will generate the largest sustained mitigation benefit.” - IPCC AR4 – Mitigation of Climate Change, 2007*

- **ADAGE is working with fuel providers who are established private landowners dedicated to protecting and enhancing the economic and environmental value of privately owned forests**
- **ADAGE fuel providers strive to meet the highest standards of forest management practices**
- **ADAGE is committed to working closely with fuel providers to ensure that sustainable fuel supplies will be available that benefit both the long-term renewable energy and forest health goals**



## ADAGE will Deliver for the Local Community

- **Each facility represents:**
  - \$150 million initial investment in the community
  - \$10 to \$20 million in annual local fuel supply purchases
  - 400 construction jobs over the 24 to 30 month construction period
  - At least 100 permanent direct jobs both at the facility and in the forests
  - Hundreds of additional indirect jobs in the local community
- **The 50 megawatt facilities will deliver baseload (24/7) renewable electricity to 40,000 homes over the 40 year life of the plant**



## ADAGE Business is Progressing

- **On May 27, announced the site of the first facility in Hamilton County, Florida, about 80 miles west of Jacksonville**
  - The rights to a 215 acre site have been secured
  - State environmental permits applications have been submitted
  - Exclusive negotiations are under way with the Jacksonville Electric Authority for power purchase and The Langdale Company for long-term fuel supplies
  - Hope to begin construction early in 2010
- **On February 18, ADAGE and Energy Northwest signed a preliminary agreement to develop wood waste biomass power plants in the states of Washington, Idaho, Montana and Oregon.**





## Areas of Collaboration with the Woody BUG

- **Provide input to ADAGE plans for existing 50 MW business model on private lands**
- **Evaluate successful strategies to bring energy solutions to stewardship of state and federal lands**
  - Wildfires are one of the largest CO<sub>2</sub> sources in the U.S.
- **ADAGE is developing potential options to work with the plans on public lands to prevent wildfire and insect infestation**
  - A smaller version of our 50 MW reference plant
  - Advanced technology to support fuel harvesting and energy production