

Al Weed, Public Policy Virginia, Williamsburg, Virginia
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BIOMASS ENERGY: PROMISE AND CHALLENGES

RURAL VIRGINIA – WHAT WENT WRONG?

✘ Economic history overview

- + Agrarian economy – tobacco, processing, race
- + Textiles, Shoes and Furniture – migration from North
- + Low wages, low skills, few unions
- + Ikea-Danville

WHERE HAS THAT LEFT US?



REALLY? WHY?

- ✘ Assembly line culture

- + Schools just good enough
- + No room for incentive
- + Best and brightest leave

Job flight – lower wages and productivity enhanced by new equipment – profits soar.

BIOMASS, VIRGINIA'S SECOND CHANCE?

- ✘ Enough biomass for 14,500 MW
- ✘ Mixed stocks of sustainable woody biomass, agricultural residues, energy crops.
- ✘ Local resources
- ✘ Will require sustained effort, appropriate public policy, and a commitment to compete.

FOR STARTERS, ENERGY!

- ✘ Proven CHP technology
- ✘ Stable electricity markets
- ✘ Soaring prices for displaceable thermal fuels
- ✘ Integrate wide range of biomass sources
 - + Chicken litter
 - + Invasive species

Fertilizer value – “Peak Potash”?

SOME BENEFITS

- ✘ Rural jobs and revitalization
- ✘ Better land use – less subdivision
- ✘ Cleaner watersheds
- ✘ Restored wildlife habitat
- ✘ Cleaner energy
- ✘ Reduced GHG
- ✘ Feedstock system development
- ✘ Strategic implications

WHAT'S NEXT? ...BIOFUELS.

- ✘ Feedstock development
- ✘ Higher value added
- ✘ Clean fuels
- ✘ Farmers' choices
- ✘ Greater strategic value

AND THEN? ... BIOCHEMICALS

- ✘ Sophisticated feedstock systems
- ✘ Local specialization
- ✘ Highest values added
- ✘ Drive education system
- ✘ Future of paper mills?

THE CHALLENGES: SUSTAINABILITY

✘ Sustainability

- + Exploitation vs husbandry
- + Energy source whose future we can, and must, control
- + Marcellus shale
- + Swedish model
- + Genetic possibilities

THE CHALLENGES: SCALE

- ✘ Fiber basket – Transport costs – Hurt
- ✘ Combustion efficiencies
- ✘ CHP revenues
- ✘ Competition
- ✘ Technology improvements

THE CHALLENGES: DESIGN

- ✘ Community density
- ✘ District heating ... and cooling. (peak power)
- ✘ Residential scale technology
- ✘ Retrofit existing systems

THE CHALLENGES: CONVENIENCE

Must compete with current fuel sources

Harvesting, processing and storage issues

Urban vs rural markets for energy

THE CHALLENGES: PUBLIC POLICY

- ✘ Market building electric rates – renewable rates as the cost of clean up?
- ✘ Effective utility incentives
- ✘ Net metering improvements
- ✘ Work force education