



Component III, Prototype Action Plan:
Conversion and Co-Products Research

Robert Fireovid, National Program Leader
Bioenergy
ARS Bioenergy Customer/Stakeholder Workshop
St. Louis, MO - 18 September 2007



Prototype Action Plan

Conversion and Co-Products Research

Objective: Develop technologies industry would deploy (from ARS) to enable (or maximize the profitability of) the conversion of ag-materials to bioenergy and co-products

Strategic Framework

- Conversion to Fuels
 - ❖ 1st gen. biorefineries (biodiesel, starch/sugar-based EtOH/BuOH)
 - efficiency improvement
 - ❖ 2nd gen. biorefineries (cellulosic EtOH/BuOH)
 - major programmatic emphasis
 - ❖ Other fuels (thermochemical)
 - near-term deployment
- Biorefinery Co-Products
 - ❖ May be more valuable than fuels!
 - ❖ Historical ARS strength
- On-Farm Use
 - ❖ Fuel/Energy
 - ❖ Soil nutrients & amendments
 - ❖ Animal feeds

Conversion and Co-Products Research

Biodiesel

- Develop lower-cost, higher-value biorefining processes for fats and oils
 - ✓ Wyndmoor, PA
 - ✓ Peoria, IL
- Develop commercially-viable uses for byproducts (e.g., glycerol)
 - ✓ Wyndmoor, PA
 - ✓ Peoria, IL
 - ✓ Albany, CA

Conversion and Co-Products Research

Starches and Sugars to EtOH/BuOH

- Develop lower-cost, higher-value biorefining processes for starches & sugars to EtOH/BuOH
 - ✓ Wyndmoor, PA
- Develop commercially-viable uses for byproducts (e.g., distillers grains)
 - ✓ Brookings, SD
 - ✓ Peoria, IL
 - ✓ Wyndmoor, PA

Conversion and Co-Products Research

Cellulosics to EtOH/BuOH

- Develop lower-cost, higher-value biorefining processes
 - ✓ Peoria, IL
 - ✓ Albany, CA
 - ✓ Wyndmoor, PA
- Develop commercially-viable uses for byproducts
 - ✓ Albany, CA
 - ✓ Peoria, IL
 - ✓ Wyndmoor, PA

Conversion and Co-Products Research

Cellulosics to Other Fuels

- Apply thermochemical technologies for converting crop-based materials
 - ✓ Wyndmoor, PA
 - ✓ Corvallis, OR
- Apply thermochemical technologies for converting animal wastes
 - ✓ Florence, SC
 - ✓ Beltsville, MD

Conversion and Co-Products Research

Platform Tools

- Develop process economic tools to identify high-impact conversion and co-products research
 - ✓ Wyndmoor, PA
- Develop technologies for on-farm preprocessing of feedstocks
 - ✓ Bushland, TX

Prototype Action Plan

Conversion and Co-Products Research

Challenges

- Coordinating with DOE, EPA, corporate and university research
- Partnering with broad-based stakeholders

Maximizing ARS impact