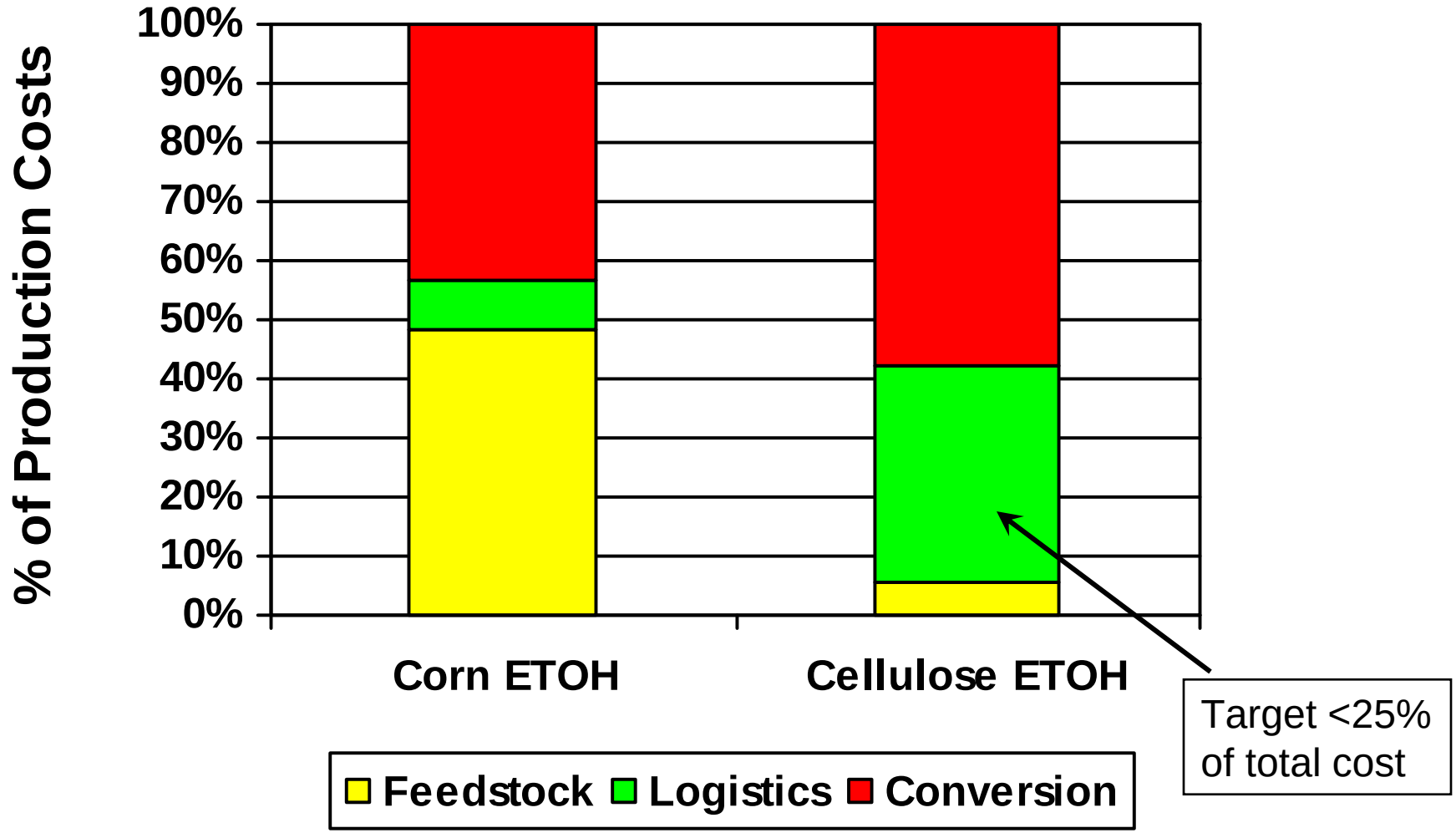
U.S. Department of Energy
Energy Efficiency and Renewable Energy

biomass program

Biomass 2010 Session 1: Feedstock Logistics

Washington, DC
March 30, 2010

Feedstock Logistics Cost Challenge



Basis of Feedstock Supply System R&D

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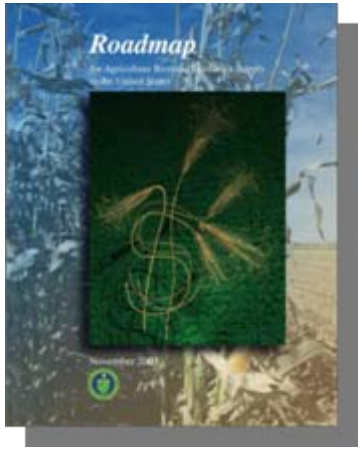
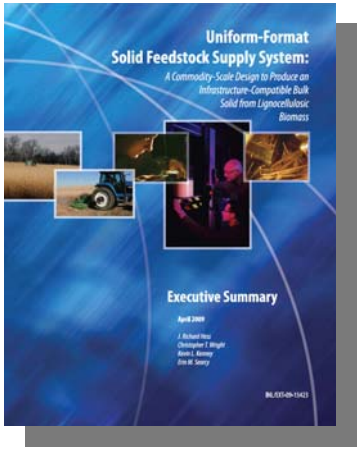
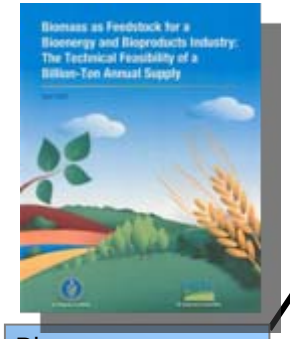
Equipment Performance Metrics:
- Equipment Efficiency / Capacity
- Dry Matter Losses
- Operational Window

Biomass Performance Metrics:
- Physical & Rheological Properties
- Product Bulk Density
- Material Stability

INL Documents Guiding Supply System Logistics Core R&D







Biomass Production:
- Ag. Resources
- Forest Resources

Feedstock Production Interface

Harvest & Collection → **Storage** → **Preprocessing** → **Transportation** → **Handling & Queuing**

- Equipment Capacity
- Compositional Impacts
- Pretreatment Impacts

- Shrinkage
- Compositional Impacts
- Pretreatment Impacts
- Soluble Sugar Capture

- Equipment Capacity
- Equipment Efficiency
- Material Bulk Density
- Compositional Impacts
- Pretreatment Impacts

- Truck Capacity
- Loading compaction
- Loading efficiencies

- Handling efficiencies
- Handling compaction
- Material Bulk Properties

Biomass Conversion:
- Biopower
- Biofuels
  - Biochem
  - Thermochem

Feedstock Conversion Interface

Critical Biomass Attributes (Cost & Performance)

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- Handling and Insertion Attributes
  - Particle size & distribution
  - Flowability
  - Bulk density
  - Void fraction
  - Compressibility
- Conversion Attributes
  - BTU content
  - Moisture content
  - Ash content & chemistry
  - Chlorine content
  - Alkali content
  - Bulk density

- Size reduction systems
- Densification
- Thermal treatments
  - drying → torrefaction

- Biomass species/variety
- Fractionation / separation
- Blending characteristics

Feedstock Logistics SOT Estimated Progression to Targets

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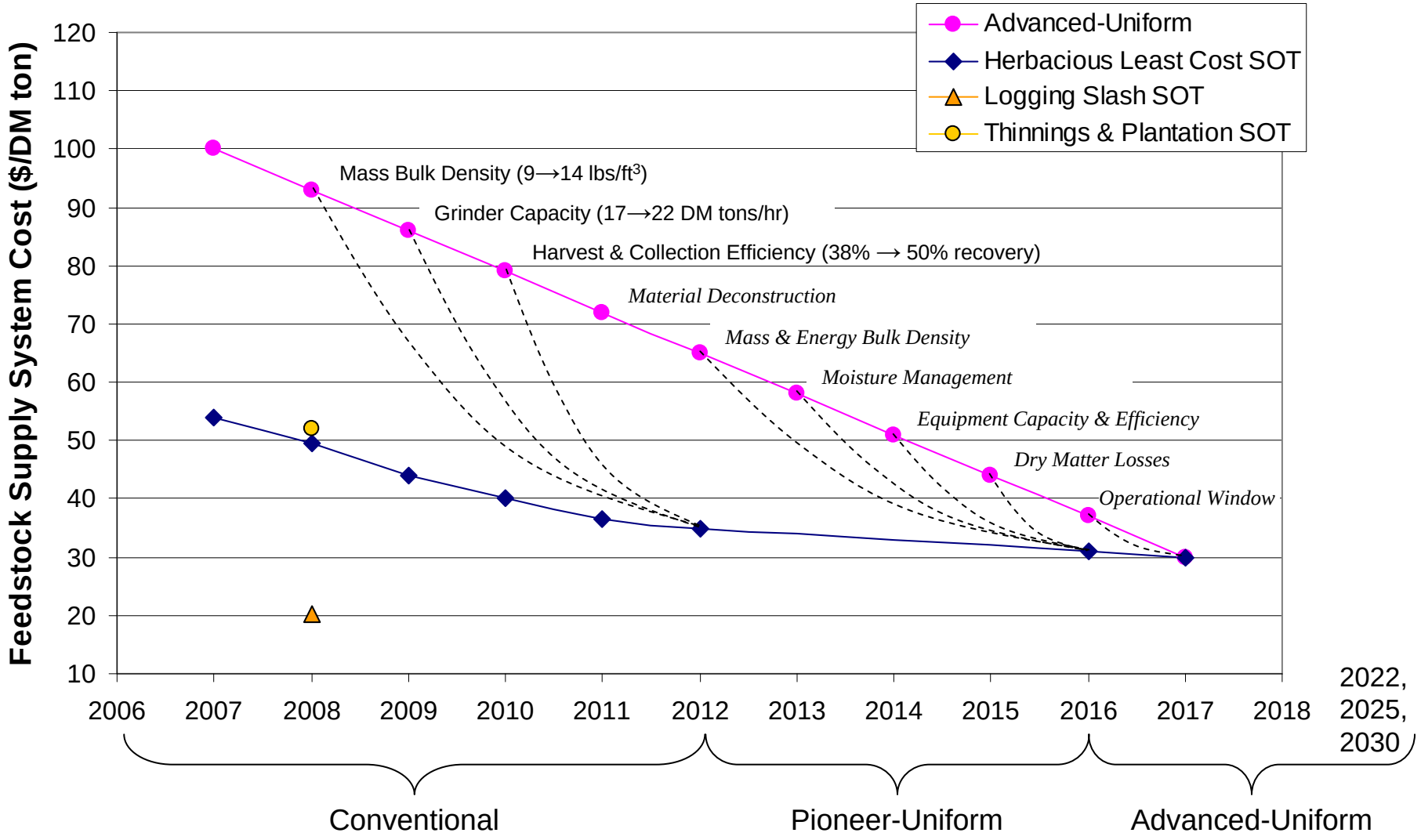

Session 1: Speakers

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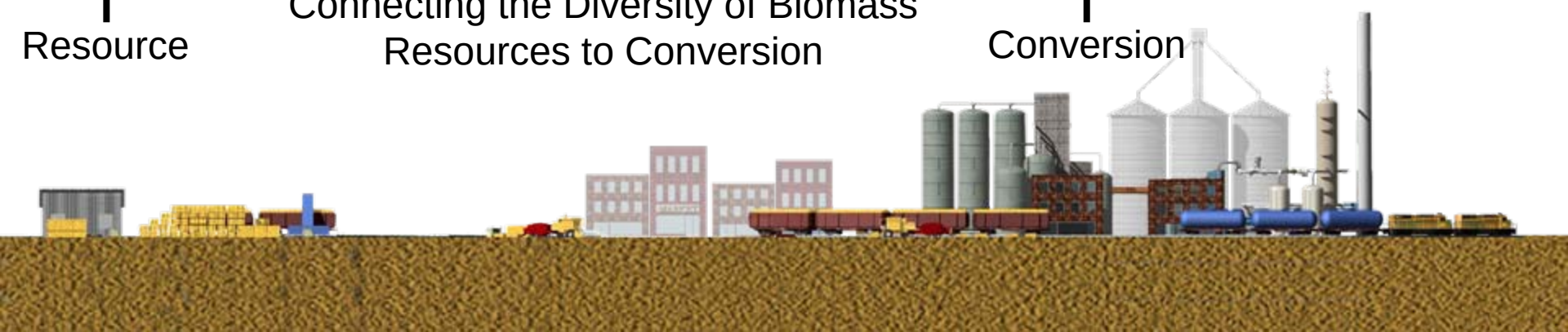
- Bob Matousek, Manager of Planting and Harvesting R&D, Agco Corporation
  - Biomass Harvest and Collection Logistics
- Kelly Tiller, President & CEO, Genera Energy, LLC
  - Demonstration of a Large-Scale Integrated Switchgrass Supply Chain
- Timothy Volk, Research Associate, SUNY-ESF
  - Harvesting System for Short Rotation Woody Crops
- Miles Palmer, Palmer Labs
  - A Few Comments on Algae Logistics

Feedstock Supply System Logistics

Connecting the Diversity of Biomass Resources to Conversion

Resource

Conversion