Creating the Cellulosic Ethanol Industry: Governors’ Biofuels Coalition Update

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DuPont Strategic Pillars

**Agriculture and Nutrition**
- Seeds
- Traits
- Ag Chemicals
- Specialty Food Ingredients

**Bio-based Industrials**
- Biofuels
- Biomaterials
- Biochemicals
- Enzymes

**Advanced Materials**
- Electronic Materials
- Protective Materials
- Alternative Energy
- Advanced Polymers

Intersection for innovation across DuPont’s competencies
Aligning Strengths in Industrial Biosciences

Leading the transformation from fossil-based to renewably sourced materials
DuPont Addressing Key Imperatives of Biofuels Growth

**Cellulosic Ethanol: Non-food Feedstocks**
- >60% greenhouse gas reduction
- Non-food sources and marginal land
- Multiple feedstock available
- Additional income for farmers

**Biobutanol: Better Fuel**
- Drop-in fuel
- High blends without infrastructure changes
- Refinery can use more fractions of oil
- Higher energy content

**Advantages:**
- Low Cost
- Low Carbon
- Scalable
- Sustainable
Cellulosic Biorefinery

- Integrated process
- Low cost, low capital
- Global reach and presence
- Differentiated licensing model
- Local solutions

Feedstock
- Agronomic expertise
- Grower relationships
- Experienced supply chain management

Conversion
- Integrated process
- Low cost, low capital

Production & Distribution
- Global reach and presence
- Differentiated licensing model
- Local solutions

Science and Collaboration are Key to Delivering Sustainable Solutions
Feedstock Availability


Source: Oak Ridge National Lab. 2012
Creating a Scalable and Sustainable Commercial Feedstock

- Large-scale harvest capability validated:
  - 18,000 acres in 2012
  - 80,000 acres in 2013
  - 190,000 acres in 2014
- Commercial equipment
- Agronomic understanding
- Multi-year grower involvement

Combining supply chain best practices with agriculture production know-how
DuPont Demonstration Facility: Tennessee
Cellulosic Ethanol Groundbreaking

Governor Branstad Proclaims November 30, Advanced Biofuels Day

Partners and Dignitaries Celebrate With Us
DuPont Nevada Cellulosic Ethanol Bio-refinery: Commercial Production 2nd Half 2014
Making Cellulosic Ethanol a Reality: By the Numbers

The DuPont Nevada Site Cellulosic Ethanol Facility is expected to be completed in mid-2014. Situated in a prime agricultural location, this over $200 million facility will be among the first commercial-scale cellulosic biorefineries in the world.

- Ethanol production: 30 million gallons/year
- Corn stover in supply radius: 815,000 acres
- Corn stover harvest rate: 2 tons/acre
- Feedstock supply radius: 30 miles
- Corn stover harvested: 190,000 acres
- Corn stover bales: 590,000 per year
- Corn stover inventory: 375,000 tons/year
- Additional ethanol from corn: 150 gallons/acre

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Cellulosic Ethanol Ready for Deployment

Enabling industry scale up with multiple points of value capture

- Technology licensing
- Selective partnership investment
- Bioprocessing consumables and services

We will operate enzyme production globally to support licensees’ enzyme needs
Together we can accomplish what no one can do alone.