



Update on the Tennessee Biofuels Initiative

TREEDC
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Tennessee's Biofuels Initiative



Energy Crop Supply Chain

Demonstrate the establishment of a dedicated biomass energy crop supply chain with farmer

 AgResearch  Extension

Biofuels, Bioproducts R&D

Establish premier RD&D capabilities and capacity in biofuels and bioproducts



Commercialization

Develop a viable, sustainable, long-term path to commercialization of cellulosic biofuels in Tennessee



Cellulosic Ethanol Biorefinery

Demonstrate the pre-commercial production of ethanol from switchgrass



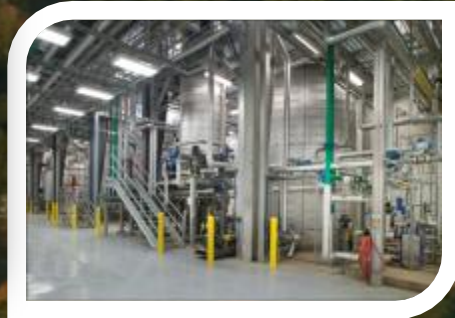
\$70.5 Million
State Commitment

Introduction to Genera Energy LLC

- Deliver integrated biomass supply chain solutions
- Private for-profit limited liability company, formed in 2008
 - Wholly owned subsidiary of UT Research Foundation
- Manage and implement \$70.5 million Tennessee Biofuels Initiative
 - A first-of-kind comprehensive switchgrass-to-ethanol demonstration program
 - Integrates large-scale switchgrass production with cellulosic ethanol biorefinery
 - Cellulosic ethanol biorefinery in Vonore, Tennessee
 - Biomass Innovation Park in Vonore, Tennessee
 - Developed key research and technology partnerships to build commercial industry
- Research and business partners across the industry value chain
 - DuPont Danisco, University of Tennessee, Oak Ridge National Lab (BESC), Bamert Seed, Ceres Inc., various equipment manufacturers
- Launched Genera Capital LLC in 2010 to raise targeted investment capital
- Recognized in 2010 by Biofuels Digest as one of the Top 100 Companies in Bioenergy
 - Recognized in 2010 with industry's Feedstock Development Project of the Year award



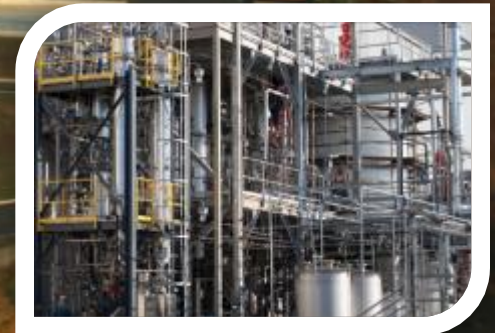
Cellulosic Ethanol Biorefinery



- Vonore, Tennessee: Niles Ferry Industrial Park, Monroe County, 32 acre site
- Started operations January 2010
- Collaboration between Genera and DuPont Danisco (DDCE)
- 250,000 GPY demonstration-scale plant and Process Development Unit (PDU) pilot plant
- Optimized as precursor to commercial facility
- Developing process technology for cellulosic ethanol
- Development work being done on multiple feedstocks
- Long-term operation as RD&D facility



Current Cost of Manufacturing: \$1.60/gallon
Competitive with oil at about \$68/barrel



New Developments

- DDCE
 - Announced a land purchase for a commercial scale facility in Nevada, IA
 - Currently evaluating sites in Tennessee for a facility



Production Experience



- Biomass production and harvesting experience with switchgrass, a native, perennial grass
- Contracting with local farmers to produce over 5,100 acres of lowland switchgrass since 2008
- UT/Genera issued incentive contracts to 61 local farmers that provide payments for establishment (inc. seed) and management of the grass over a 3 year period



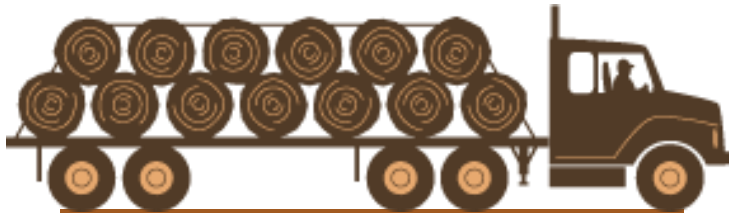
Harvesting Improvements



- In-field cost reductions
- Increased bulk density
- Improved harvesting systems
- Improved on-farm logistics
- Risk management



Biomass Handling, Transport and Storage



- Year-round supply
- Maximize bulk handling
- Minimize storage loss
- Increase density of stored material
- Manage moisture



Biomass Innovation Park

- World-class RD&D
- Integrates entire biomass value chain
 - Harvest, handling
 - Pre-processing
 - High throughput conversion and analysis
 - Agronomics, plant health
 - Intermediate products



ed high tonnage
ration

2011

print to demonstrate
other conversion
ocks

al Rendering: July 2010



National Policy for Biofuels

- Renewable Fuel Standard
- Volumetric Ethanol Excise Tax Credit
- Cellulosic Biofuel Producer Tax Credit
- Biomass Crop Assistance Program
- E-15 Blend
- Ethanol Import Tariff



Moving to a Commercial Scale

\$1.03 Billion - Construction/Equipment Investment

\$135 Million - Annual Switchgrass Farm Revenue

\$300 Million - Annual Ethanol Sales

1,464 - Annual Total Direct Jobs

151 - Million Gallons Ethanol

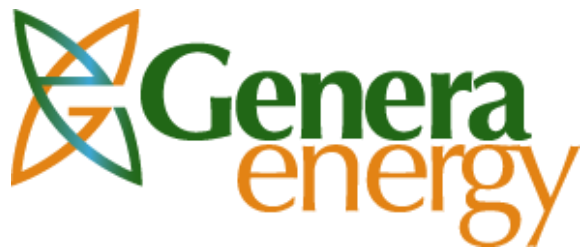
184 - Thousand Acres Switchgrass



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Thank You



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