Growing Jobs and Rural Economies:
The Farm Bill’s Energy Title

April 4, 2018

Materials will be available at: www.eesi.org/040418energytitle

Tweet about the briefing: #eesitalk @eesionline
• Ag Energy Coalition started several years ago on last Ag bill;

• Diverse set of “ag energy” and renewable interests promoting rural renewables and energy efficiency;

• Members include BIO, National Farmers Union, EESI, American Biogas Council, Biomass Power Association, DWEA, National Rural Lenders Association, ELPC and others;

• Website: www.agenergycoalition.org

• POC: Lloyd Ritter, 202-215-5512, lritter@greencapitol.net
• Founded in 1984 by a bipartisan Congressional caucus.
• Now an independent, bipartisan nonprofit with no Congressional funding.
• We provide fact-based information on energy and environmental policy for Congress and other policymakers.
• We focus on win-win solutions to make our energy, buildings, and transportation sectors sustainable.

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DUPONT BIOMATERIALS
Growing Jobs and Rural Economies: The Farm Bill’s Energy Title

John Sagrati – Business Development Manager, DuPont Industrial Biosciences
RETHINK RENEWABLE PERFORMANCE

DuPont Biomaterials’ differentiated value proposition

INNOVATIVE SCIENCE
HIGH PERFORMANCE

SCALABLE SUPPLY
ACCESSIBLE & AFFORDABLE

RENEWABLE SOURCING
RESPONSIBLE BIOMATERIALS
RENEWABLY SOURCED 1,3 PROPANEDIOL

Biomass Feedstock → Sugars → BioChemicals Bio-PDO®* → Sorona®* (triexta) → Yarn

Cosmetics & personal care
Pharmaceutical and dietary supplements
Laundry & Household cleaning
Food & Flavors

Polymer/Elastomer resins
Heat Transfer fluids
Solar & Geothermal Systems
Low Temperature Food-Safe Fluids
Engineer Coolant
De-Icing Fluid

Carpet
Clothing
Textiles

DUPONT™ sorona®

MOHAWK SmartStrand

THE NORTH FACE
L.L.Bean
BURTON
KÜHL
Responsible Materials

Need to be genuinely responsible
Environmentally
Socially

Need to be identifiable

Need to be publicized/promoted

Sorona® renewably sourced fiber is one of the first 11 products approved as part of the United States Department of Agriculture (USDA) BioPreferred Program for certified bio-based products.
## DuPont’s BioPreferred Materials

<table>
<thead>
<tr>
<th>Product</th>
<th>Company</th>
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<tbody>
<tr>
<td>PDA049B</td>
<td>Everest Textile Co., Ltd.</td>
</tr>
<tr>
<td><strong>FP</strong> SmartStrand Contract with Dupont Sorona</td>
<td>Mohawk Industries Inc.</td>
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<tr>
<td><strong>FP</strong> SmartStrand Residential with Dupont Sorona Polymer</td>
<td>Mohawk Industries Inc.</td>
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<tr>
<td>Sorona Polymer</td>
<td>DuPont Industrial Biosciences</td>
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<tr>
<td>Susterra® FG</td>
<td>DuPont Tate &amp; Lyle Bio Products Company, LLC</td>
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<tr>
<td>Susterra® P1000</td>
<td>DuPont Tate &amp; Lyle Bio Products Company, LLC</td>
</tr>
<tr>
<td>Susterra® Propanediol (1,3 Propanediol)</td>
<td>DuPont Tate &amp; Lyle Bio Products Company, LLC</td>
</tr>
<tr>
<td>Zemea® Propanediol</td>
<td>DuPont Tate &amp; Lyle Bio Products Company, LLC</td>
</tr>
<tr>
<td>Zemea® Select</td>
<td>DuPont Tate &amp; Lyle Bio Products Company, LLC</td>
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<tr>
<td>Zemea® USP FCC</td>
<td>DuPont Tate &amp; Lyle Bio Products Company, LLC</td>
</tr>
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<td>Zemea® USP NF</td>
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</tbody>
</table>
THANK YOU FOR YOUR TIME

Learn more about DuPont Biomaterials

biosciences.dupont.com/biomaterials

@DuPontBiobased

DuPont
Winning at Next Generation Renewable Chemicals

John R. Shaw

April 4, 2018
Itaconix Corporation
is the world leader in
polymers from itaconic acid

We produce polymers for everyday applications that achieve three essential objectives – safety, performance and sustainability.
Itaconix: Novel Renewable Polymers with Great Customer Value

- Founded in 2008 with technology from the University of New Hampshire
- New water-soluble polymer leading the next generation of non-phosphate detergents
- Growing use in over 45 consumer products
- Potential for 100% renewable & biodegradable superabsorbent
- 30 employees in US and Europe
Challenges for Emerging Renewable Chemical Companies

- Demonstrating the value of new materials in end-product formulations can take many years.

- New renewable chemicals usually need for new capital-intensive plants to supply customers.

- Availability of funding - no one wants to pay for scaling from lab bench to pilot production.
2018 Farm Bill: Expand Section 9003 to Renewable Chemicals

**Current Farm Bill**

- **Advanced Biofuels**
- **Renewable Biomass**
  - Ethanol in gasoline

**2018 Farm Bill**

- **Renewable Chemicals**
  - Polyitaconic acid to replace phosphates
  - Nanocellulose to replace formaldehyde

- **Safer Chemicals**
  - Biodegradable PLA & PHA packaging
  - Biodegradable superabsorbent diapers

**Increasing Value**

- More Value = More Jobs
Presentation to:
Environmental & Energy Study Institute &
Ag Energy Coalition
April 4, 2018
ReEnergy Holdings and SUNY-ESF

ReEnergy:
• Largest pure-play biomass power company in U.S. HQ Latham, NY
• ~ 300 employees; 4 states
• 245 MWs of renewable energy generation

College of Environmental Science & Forestry:
• 30+ years experience with willow
• Part of State University of NY
• Environmental college with 1,700 undergrads & 500 grad students
USDA designated a BCAP project area in central and northern NY in 2013 to support expansion of shrub willow biomass crops on marginal land.

ReEnergy committed to purchase all of the willow over an 11-year period.

Currently 1,188 acres in three counties are enrolled and more than 8,500 tons of willow delivered to ReEnergy from 2013 through Feb. 2018.

Willow found to be suitable fuel in terms of moisture and ash content, now incorporated directly with other feedstocks upon delivery.
Project Benefits

- Overcomes barriers of high upfront costs and delayed cash for growers
- Creates stable, long-term end markets
- Advances research and deployment
- Provides fuel diversity benefits for ReEnergy
- Supports jobs and rural development
  - 45 – 59 jobs for every 10,000 acres
- Creates environmental benefits
  - Carbon-neutral; wildlife habitat
- Revitalizes idle or marginal lands
- Provides extension services
- Creates opportunities for companies to engage (e.g. New Holland Agriculture)
BCAP in Western U.S.

- BCAP also funds the collection and transportation of biomass material to biomass power plants.
- Forests in the Western U.S. are facing crises – drought, beetle blight, overgrowth. 100+ million dead and dying trees in California forests alone.
- BCAP enables a public/private partnership to remove the dead and dying trees (also known as hazardous fuels) and put them to use as fuel to generate power.
- Fully funding BCAP can help reduce catastrophic wildfires and save $ spent fighting them.
Thank You!

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BCAP Drives Investment In Rural America

- **BCAP**: Crop Subsidy, Land Rent, Matching Payments
- **Innovation**: Perennial Crops Need Investment to Innovate.
- **Time**: Farmers Cannot Wait 3-5 Years to Generate Revenue. Neither Can Investors!
- **Critical Mass**: Private Market needs Reliable, Stable, and Consistent Raw Material Supply Chains.

Stable Supply Chains Enable:

- Private Market Investment in Manufacturing.
- Private Market Investment in R&D/Innovation/Patents.
Aloterra

Raw Material Supply

Product Development

Absorbent

Pulp

Molded Fiber

Nano Cellulose

Manufacturing

2014 – 10 FT

2015 – 8 FT
2019 – 12 FT

2015 – 52 FT
2019 – 250 FT

Argonne Nat’l Lab, Univ. of Chicago, and CWRU

Pilot 2020 – 25 FT

Other Products in Early Development
What can 40,000,000 Acres Do?

4,500 Acre Project (.0001% of 40M) Has Created:

- $25M Private Market Investment was created by $5M BCAP Investment.
- Not possible without USDA Rural Development loan guarantee of equipment, SBA Real Estate loan guarantee, JobsOhio loan, and CDBG loan (503 Corp).
- World’s first facility producing pulp and packaging from Miscanthus. Facility is competing with China and Taiwan on price and quality!
- 125+ farming families and landowners have a new source of revenue – stays in local economy.
- 70 FT Jobs with Healthcare and 401K benefits – stays in local economy.
- 2018-2019 expansion from 6 to 30 manufacturing lines and approx. 250 more FT jobs!!!
- 1 Patent Granted. 3 Pending Patents.
Growing Jobs & Rural Economies
The Farm Bill Energy Title

Graham Christensen
Family Farmer and President of GC Revolt
Rural Energy for America Program

- Grants & Loan Guarantees to farmers, ranchers, & rural small businesses
- Cost-share for installing a variety of renewable energy systems
  - Biomass, Geothermal, Hydro, Wind, Solar
- Energy Efficiency Improvements
  - HVAC, Lighting, Insulation, Refrigeration, etc.
GC ReVOLT

• Approximately 25 solar systems developed in NE/IA
  • Farm, Commercial, Residential & Community Scale
• Interest Level is Exploding
• Farmers are moving in this direction because it makes a lot of fiscal sense
  • Now lower cost to develop your own system vs paying expensive utility bills
    • $0.05/kwhr levelized cost of energy for 25 years vs $0.10/kwhr with inflation (in NE)
Brummond 10 kw Farm Solar System

Project Cost: $40,000  Grant: $9,900
Remaining $ Went To: Equipment Manufacturers, 3 electricians, & a new Nebraska-business with one full-time & two part-time employees
Harmony Nursery 25 kw
Rural Business System

USDA Award Winner!!  Project Cost: $88,000  Grant: $17,800
Remaining $ Went To: Equipment Manufacturers, 1 electrician, &
my small business with one full-time & two part-time employees
Practice What You Preach
Christensen 20kw Farm Solar System
Grant: $12,500

Helped Burt County Wind pay for a meteorological tower to test wind speeds in the area. We recently sold to a wind development company that is working with us to develop resources.

New revenues will included property tax revenues, land lease payments, financing, & the lowest cost energy available.
REAP Value Proposition

• New Rural Jobs & Entrepreneurial Opportunities
• New Revenue Streams For Rural Businesses
• Lower Electricity Costs
• Energy Security
  – Batteries Increase Security Further
• Improved electrical grid reliability
• No emissions, no water degradation

Takeaway: USDA REAP is important for driving vital new rural revenues, opening up new job opportunities in Rural America
Distributed Wind for Farms and Rural Businesses

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Distributed Wind: Behind the meter, or off-grid, and sized for the customer’s needs

Residential

Schools

Commercial

Remote Communities

Military

Farms

Public

Foreign Assistance
Voice of the Distributed Wind Industry
Benefits of Distributed Wind

- Provides economic development serving primarily rural areas
- Contributes to the renaissance in American manufacturing
  - Small/medium turbines have > 90% domestic content
- Expands exports
Benefits of Distributed Wind

- Strengthens the grid and promotes resilience
- Vast potential
  - 50 million sites
  - All 50 States
  - Major under-developed national resource
DWEA Federal Policy Priorities – 2018

1. Grow DOE distributed wind RD&D program, $10m for distributed wind: Done

2. Extend USDA REAP funding; provide balance for “under-served technologies” like DW

3. Tax policy parity with solar; eliminate 100 kW cap & provide permanent 10% business ITC
Funding and diversity for USDA REAP program

- DWEA has worked diligently on funding and reforms every year – with notable successes
  - Mandatory funding in 2012, 2014 Farm Bills
  - Streamlined applications and other reforms in 2015 “New Rule”
- Current scoring heavily favors lower cost technologies, not those that are proven but less market mature and need the boost
- DWEA supports full funding, but with reforms to address the technology diversity imbalance
  - Headquarters set-aside for underserved technologies
  - Categorical Exclusion for small systems (as already provided for solar) environmental documentation
  - “Made in America” consideration in selections
Thank you.

www.distributedwind.org
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What did you think of the briefing?
Please take 2 minutes to let us know at:
www.eesi.org/survey

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