Growing the Biobased Economy

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USDA Rural Development

BIOMASS RESEARCH AND DEVELOPMENT
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Finalization of the Renewable Fuel Standard

"The rule released today is a positive step forward providing for continued growth in all parts of the Renewable Fuel Standard—advanced, biodiesel, cellulosic, and conventional—building on the Obama Administration's and USDA's commitment to biofuels and American-grown renewable energy. While the Renewable Fuel Standard is one piece of the equation of this commitment, it is not the only piece. Significant strategic investments by this Administration across the board in feedstock production, research, refining capacity, distribution and new market development have resulted in an a sophisticated and growing American biofuels industry.

--Secretary Tom Vilsack, USDA

http://www.usda.gov/wps/portal/usda/usdahome?contentid=2015/11/0330.xml&navid=NEWS_RELEASE&navtype=RT&parentnav=LATEST_RELEASES&edeployment_action=retrievecontent

Launch of the Great Green Fleet

- Secretary of the Navy Ray Mabus and Secretary of Agriculture Tom Vilsack kicked off the Great Green Fleet with the deployment of the USS John C. Stennis Carrier Strike Group with missile destroyer USS Stockdale becoming the first U.S. Navy ship running on an alternative fuel blend as part of its regular operations.
- Great Green Fleet highlights how Navy and Marine Corps are using alternative energy and efficiency to increase combat capability, operational flexibility.
- Fuel blend was produced by California-based AltAir Fuels from a feedstock of beef tallow provided by Midwest farmers and ranchers.

- Defense Logistics Agency awarded a contract to AltAir Fuels for 77.6 million gallons of the alternative fuel blend, at a cost to DLA of $2.05 per gallon, making it cost competitive with traditional fuel.
- Through the Commodity Credit Corporation, USDA is able to partner with the Navy to help diversify its fuel supply and simultaneously support America's own farmers, ranchers and rural economies.

Farm to Fly 2.0 expands to Florida (and GA, AL)

- Received a Rural Business Development Grant for $97,000 to be utilized by the Treasure Coast Education Research and Development Authority (TCERDA) to provide research and development of a collaborative with focus on Florida's long term need for sustainable jet fuel will make a difference both in the area's economy and the environment.
- Florida Kickoff at the Treasure Coast Research Park focused on creating a comprehensive list of what constitutes "feasibility" as it relates to a projected Florida sustainable fuels project (centered in Ft Pierce, St. Lucie County) in lands largely laid fallow by the loss of the region's citrus crop.
- Nearly a hundred science and industry leaders, along with a number of representatives from local government and agribusiness, gathered to define and discuss the possibilities and potential for utilizing locally-produced crops to create fuel suitable for powering transportation vehicles, including passenger jets.
- Separate meetings discussing work in GA, AL, MN, Chesapeake Bay

FARM to FLY

FROM THE GROUND UP

Biofuel Infrastructure Partnership

- USDA is partnering with 21 states through the Biofuel Infrastructure Partnership (BIP) to nearly double the number of fueling pumps nationwide that supply renewable fuels to American motorists.
- With the matching commitments by state and private entities, the BIP is investing a total of $210 million to strengthen the rural economy, with match amounts and requests outpacing the $100 million available.
- These awards are estimated to expand infrastructure by nearly 5,000 pumps at over 1,400 fueling stations.
- More information: www.fsa.usda.gov/programs-and-services/energy-programs/bip/index

Record Ethanol Exports to China

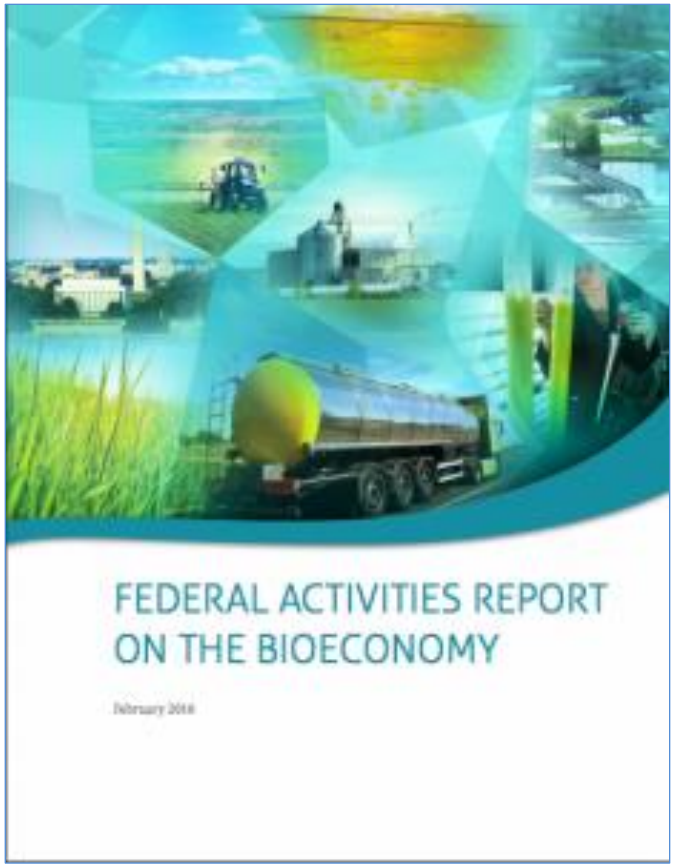
- Significant jump in ethanol exports to China this year, following a USDA-led trade mission to the country last year.
- Mission explored the role that renewable fuels might play in China's long-term clean energy strategy.
- Delegation met with gasoline companies, fuel blenders, oil companies, commodity traders, and government officials to promote the benefits of using higher ethanol blends.
- During October, the U.S. exported 32.5 million gallons of ethanol to China, valued at $57 million, or 46 percent of total U.S. ethanol exports for the month.
- Previous U.S. exports of ethanol to China averaged less than $3 million annually from 2005 to 2014.

Research Shows Significant Improvement in Efficiency of Ethanol Production and Other Trends

- Between 1991 and 2010, direct energy use in corn production has dropped by 46 percent per bushel of corn produced and total energy use per bushel of corn by 35 percent.
- Between 2005 and 2010, direct energy use fell by 25 percent and the total energy use by 8.2 percent per bushel—
- Between 2005 and 2010, the energy required per bushel of corn produced dropped by about 5 percent.
- "The bottom line is, today, more energy is being produced from ethanol than is used to produce it, by factors of 2 to 1 nationally and by factors of 4 to 1 in the Midwest."
- More information of the recently released studies can be found here:
  http://www.usda.gov/oce/reports/energy/2015EnergyBalanceCornEthanol.pdf
  www.fapri.missouri.edu/wp-content/uploads/2016/02/FAPRI-Report-01-16.pdf

Federal Activities Report on the Bioeconomy (FARB)

- The FARB focused on current agency activities ongoing in support of the existing Bioeconomy.
- The Report details the conceptualized Vision by including:
  - A definition of the existing U.S. Bioeconomy,
  - Background on the path to developing the Vision,
  - Description of scope of the Bioeconomy Vision, including expected benefits and challenge areas,
  - Broad discussion on challenges and opportunities,
  - An overview of the current roles for agencies,
  - And examples of ongoing interagency activities aimed at improving and expanding the Bioeconomy.



- Read more at: http://www.biomassboard.gov/pdfs/farb_2_18_16.pdf

National Institute for Food and Agriculture (NIFA)

- $18 million in grants available to strengthen research and teaching at historically black land-grant universities through the 1890 Institution Research, Extension, and Teaching Capacity Building Grants program.
- The Capacity Building Grants (CBG) program supports agricultural science programs while strengthening the linkages among the 1890 universities, other education institutions, USDA, and private industry.
- Grants are awarded in the categories of research, teaching and extension with a focus on NIFA's priority areas of sustainable **bioenergy**, food security, childhood obesity prevention, climate change, and food safety.
- Applications are due March 31. Please see the request for applications for more information.

More to come on USDA R&D

- Presentations today by:
  - Dr. Sonny Ramaswammi, Director or the National Institute for Food and Agriculture (NIFA)
    - http://nifa.usda.gov/program/agriculture-and-food-research-initiative-afri and http://nifa.usda.gov/
  - Daniel Cassidy from National Institute for Food and Agriculture (NIFA),
  - Gene Lester from Agriculture Research Service (ARS).
  - Also here Dr. World Nieh, National Program Leader, Forest Products and Utilization, Forest Service

“Bringing Up Biofuel” in January 2016 AgResearch Magazine

- *Highlights research team from ARS Eastern Regional Research Center out of Wyndmoor, PA.*
- Key advances in process that produces a crude “bio-oil” from agricultural waste.
- Modified technique called “tail-gas reactive pyrolysis” (TGRP), holds promise for processing, improving bio-oil.

- “The quality of TGRP deoxygenated liquids is equal to or better than the bio-oil produced by catalytic pyrolysis.”
- “TGRP is an important step toward the ultimate goal of producing cleaner bio-oils that can be distilled at existing petroleum refineries.”
- Mobile unit construction funded by Biomass Research and Development Initiative grant.
- More information at: http://agresearchmag.ars.usda.gov/2016/jan/biofuel/#printdiv

“Camelina Holds Promise for Biofuel and Bees” from Nov

- *Highlights research team from ARS’s Soil Management Research Unit in Morris, MN.*
- A chief focus is evaluating and integrating camelina, canola, pennycress, and other oilseeds into production systems of traditional midwestern crops, notably corn and soybeans.
- Noted study examined seasonal water use of double (sown after harvest) and relay (seeded between rows) cropping.

- Demonstrates a sustainable way to grow crops for both food and fuel on the same parcel of land, potentially offering farmers a dual source of income in a single season.
- Mobile unit construction funded by Biomass Research and Development Initiative grant.
- More information at: http://agresearchmag.ars.usda.gov/2015/nov/oilseed/#printdiv

New Risk Mitigation Tools

- Risk Management Agency announced producers in Montana, North Dakota, and South Dakota can insure carinata by written agreement under canola and rapeseed plans.
- Crop insurance provides protection against loss in production due to natural perils, such as drought or excessive moisture.
- Carinata, a semi-arid plant, is an inedible oilseed sharing characteristics of both mustard and canola and is intended for the biofuel market.
- The common name for the crop is “Ethiopian Mustard.” Carinata is a rotational crop option that can be used to produce jet fuel and protein meal for livestock.
- Learn more about crop insurance and the modern farm safety net at www.rma.usda.gov.

BioPreferred Program (9002)

- Procter & Gamble's Tide detergent will soon release Tide PurClean, a recently certified biobased product through USDA's BioPreferred Program
- Strengthening markets for biobased products with more than 2,500 products carrying BioPreferred label, Represents companies in over 40 countries on six continents; Apply on BioPreferred.gov
- 100 designated product categories representing around 14,000 products included in mandatory federal purchasing initiative
- Find a recently released fact sheet on the BioPreferred Program here: http://www.usda.gov/wps/portal/usda/usdahome?contentidonly=true&contentid=2016/02/0047.xml

Conditional Commitment to Build Georgia Biofuel Plant (9003)

- $70 million loan guarantee awarded to Ensyn Georgia Biorefinery I, LLC (Ensyn) to construct and operate a cellulosic biofuel refinery in Dooly County, Georgia under the 9003 Program.
- The company will produce 20 million gallons of renewable fuel per year employing its Rapid Thermal Processing, a fast thermal process to convert non-food-based feedstocks into biobased fuels.
- Ensyn will convert 440 dry tons of woody biomass into a renewable fuel oil (RFO) product; There is an abundant supply of woody biomass near the plant due to excess forest materials in the region, can use a variety of other non-food cellulosic feedstocks as well.
- The RFO will be used as a heating oil replacement and as a renewable feedstock for diesel and gasoline production at refineries.
- The project will lead to the direct employment of up to 138 people, including nearly 70 permanent jobs when fully operational.
- The Lender of Record under the loan guarantee is Citi.

Conditional Commitment for Oregon Biogas Plant (9003)

- The US Department of Agriculture (USDA) has confirmed a $11 million loan to Minnesota-based waste-to-energy company Novus Energy, LLC to build a new biorefinery in Boardman, Oregon.
- The Novus Pacific facility will convert 680 tons per day of organic material into 3.8 million cubic feet of renewable natural gas, organic fertilizer, and soil amendments.
- Novus will use waste from onion and potato processing plants, dairy manure, seasonal plant by-products and other waste supplied by local growers and processors as the primary feedstock.
- The company expects their technology to produce gas in four days instead of 15 to 20 days and convert 90% of the organics rather than the 50-60% industry average.
- Novus is working with an Oregon lender, Old West Federal Credit Union, to finance the project.
- The total cost for the plant is expected to be $20.2 million.

Biorefinery, Renewable Chemical, and Biobased Product Manufacturing Assistance Program (9003)

- This program provides loan guarantees for eligible project costs up to $250 million to assists emerging technologies.
- The Updated Regulation uses a 2-phase application process.
  - There are two application cycles each fiscal year. Applications may be submitted at any time.
  - Letter of Intent deadlines are September 1 and **March 2**,each year.
  - Application deadlines are October 1 and April 1, each year.
  - Applications will be evaluated for eligibility, technical and financial feasibility and sufficient project equity.
  - Applicants with the highest priority scoring may be invited to submit Phase 2.
- Phase 1 Applications Include: project summary, financial statements, financial model, feasibility study, business plan, etc.
- Phase 2 Applications Include: technical assessment/technical report, environmental assessment, lender's analysis/credit evaluation/supporting materials, etc.

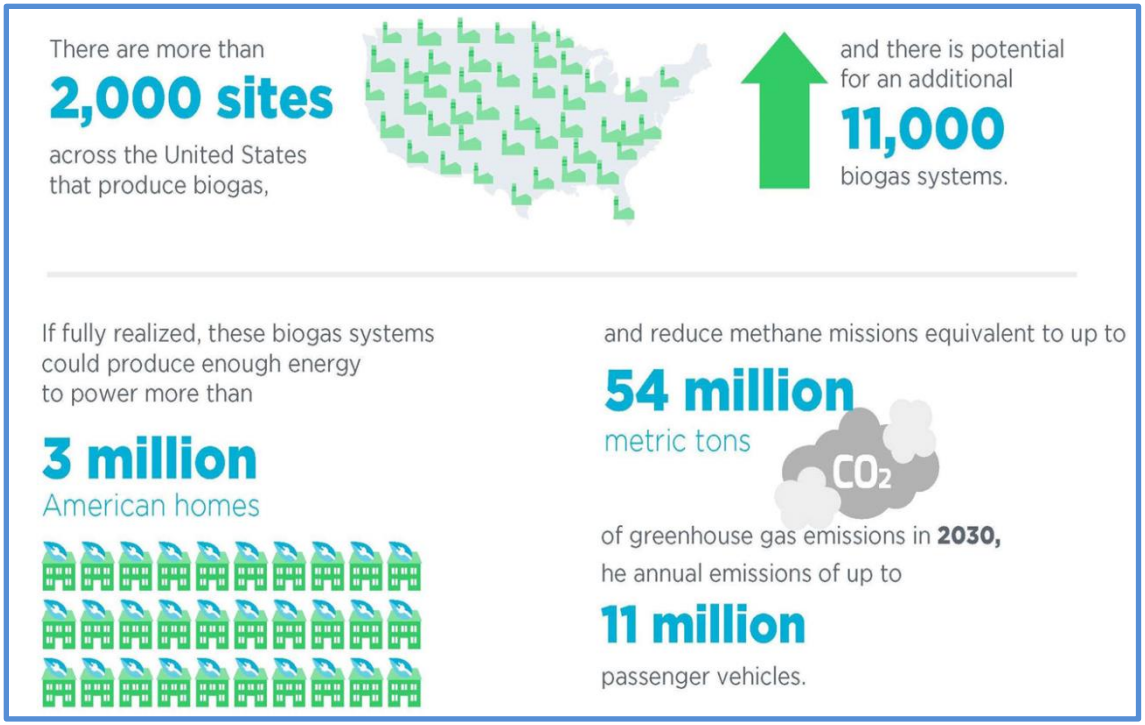
Other Title IX Programs

- To encourage advanced biofuel production, USDA has made payments through the Advanced Biofuel Payment Program (9005) to over 300 companies in 47 states; Yearly applications deadline is October 31
- Applications are being accepted in the Rural Energy for America Program (REAP, 9007).
- Program staff are working to determine funding allocation for $3 million appropriated for Biomass Crop Assistance Program (BCAP), significant reduction

Progress Report for the Biogas Opportunities Roadmap

Highlights:

- Inclusion of biogas in cellulosic advanced fuels in EPA published Renewable Fuel Standard Pathways II
- DOE Resource Assessment on Renewable Hydrogen Potential from Biogas
- USDA published final Rural Energy for America Program (REAP) rule, streamlined application and scoring



- DOE's Bioenergy Technologies Office Multi-Year Program Plan update to explicitly call out "wet waste", a key resources in biogas
- USDA Rural Utility Services loan guarantees to distributed generations projects that produce electricity (with Power Purchase Agreements) to serve rural areas.
- USDA 9003 Program interim rule and funding notice to provide loan guarantees to commercial, municipal, and industrial biogas plant deployment.
- Read more at: http://www.rd.usda.gov/files/Biogas-Roadmap-Progress-Report-v12.pdf

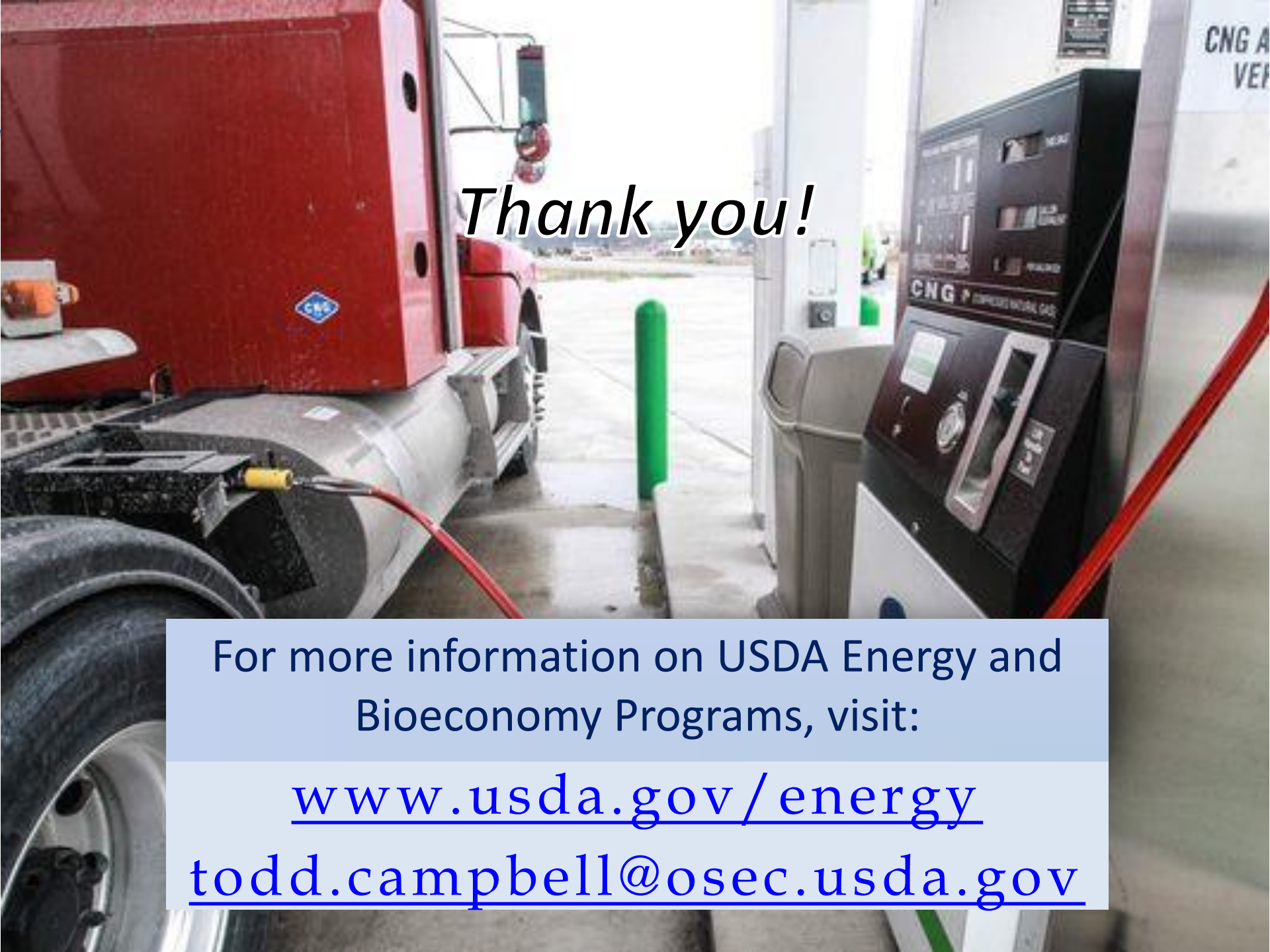
Biogas Opportunities Case Study: Fair Oaks Farm

- Fair Oaks Farms saw the potential and launched Renewable Dairy Fuels, a company dedicated to converting biogas to renewable natural gas.
- Anaerobic digester generates about 865 MMBtu of renewable natural gas/day from 11,000 cows.
- CO_2, H_2S and other soluble gases are removed from the biogas, resulting in clean, dry gas; odorant is added to complete the process

Biogas Opportunities Case Study: Fair Oaks Farm

- Gas is transferred to fueling station with gas drying, compressing and dispensing operations.
- Final product is compressed natural gas (CNG), used by a fleet of CNG trucks to haul milk from the farm
- The Fair Oaks Farms truck fleet delivers 53 loads of milk per day, amounting to 90 million gallons/year.
- The CNG fleet saves more than 1.5 million gallons of diesel per year by operating on CNG.

More information: http://www.usdairy.com/~/media/usd/public/dairypowercasestudy_renewableenergy.pdf.ashx



Thank you!

For more information on USDA Energy and Bioeconomy Programs, visit:

www.usda.gov/energy

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