

USDA Update: Building the Biobased Economy



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USDA Rural Development

BIOMASS RESEARCH AND DEVELOPMENT
TECHNICAL ADVISORY COMMITTEE PUBLIC MEETING
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In announcement inviting applications for 9003 Program...

"The bioeconomy is a catalyst for economic development in rural America, creating new jobs and providing new markets for farmers and ranchers. Investing in the businesses and technologies that support the production of biofuels and biobased products is not only good for farm incomes. The whole economy benefits from a more balanced, diversified and consumer-friendly energy portfolio, less dependence on foreign oil and reduced carbon emissions."

--Secretary Tom Vilsack, USDA



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

- The program now provides loan guarantees of up to \$250 million to develop, construct and retrofit commercial-scale biorefineries and to develop renewable chemicals and biobased product manufacturing.
- For this announcement, USDA will seek applications in two cycles. Applications for the first funding cycle are due **October 3, 2016**. Applications for the second cycle are due **April 3, 2017**.
- Newly implemented two-phase application process to help identify projects that have made most progress in the development stage, greatest capacity for implementation and loan closing.
- First two cycles under the new process yielded complete applications from projects producing biogas, biodiesel, cellulosic ethanol, biobased lubricants and oils, lignin cake and syrup, and fertilizers.
- For more information, p. 48377 of the July 25, 2016, [Federal Register](#).
- Application materials on USDA's [Rural Development website](#).
- More to come from Energy Division Director Mark Brodziski

Repowering Assistance Program (9004)

- USDA accepting applications to encourage the use of renewable biomass as a replacement fuel source for fossil fuels used to provide process heat or power in the operation.
- Biorefinery can receive 50 percent of total eligible project costs up to a maximum of \$1 million for project related construction costs for repowering improvements associated with the equipment, installation, engineering, design, site plans, associated professional fees, permits and financing fees.
- To be eligible for payments, biorefineries must have been in existence on or before June 18, 2008.
- Applications will be accepted through October 24.
- More information can be found on p. 48381 of the July 25, 2016 [Federal Register](#) and on the Rural Development Web site at <http://www.rd.usda.gov/programs-services/repowering-assistance-program>

Rural Energy for America Program (REAP)

- USDA announced \$43.2 million in loan guarantees and \$11.6 million in grants through REAP for projects in every state, as well as in the Virgin Islands, Western Pacific and Commonwealth of Puerto Rico.
- Five awards made for biomass systems including a Loan Guarantee of \$3.9 million loan to Lakeview Biodiesel, LLC to purchase the assets with plans to upgrade the 10 million gpy former Producer's Choice Soy Energy facility in Moberly, Missouri.
- Complete list of awards can be found at the following link:
www.rd.usda.gov/files/RD-RBS-REAP-RecipientsJuly_11_2016.pdf
- Additional unrestricted grants and guaranteed loans are under review and will be announced in the coming month.
- Earlier list of recipients for REAP Energy Audit and Renewable Energy Development Assistance can be found at the following link:
www.rd.usda.gov/files/RD_REAPEnergyAudit_05_2016.pdf

Small Business Innovation Research (SBIR) Program

- More than \$8.3 million in available funding through National Institute for Food and Agriculture (NIFA) for the Small Business Innovation Research (SBIR) program to support small businesses in the creation of advanced research and development projects that will lead to innovative solutions for American agriculture.
- The SBIR program stimulates technological innovations in the private sector and strengthens the role of federal research and development in support of small businesses, encourages participation by women-owned and socially or economically disadvantaged small businesses.
- Companies initially apply for Phase I feasibility studies, which may be followed by Phase II research and development projects. Phase I grants are limited to \$100,000 and a duration of eight months, while Phase II grants are limited to \$600,000 and a duration of 24 months.
- Applications are due October 6. See the request for applications for more information: <https://nifa.usda.gov/funding-opportunity/small-business-innovation-research-program-phase-i>

Agriculture and Food Research Initiative (AFRI)

Coordinated Agricultural Project and Alcohol-to-Jet

- A major milestone was reached in June when two commercial Alaska Airlines flights departed Seattle-Tacoma Airport fueled by 1,500 gallons of alcohol-to-jet (ATJ) fuel made by Gevo, Inc., blended at 20% with petroleum based jet fuel.
- These flights represent the first-ever commercial flights on the recently ASTM qualified fuel.
- Gevo's ATJ conversion process can utilize sugars and starches that originate from multiple sustainable sources, including agriculture, silviculture, and industrial process waste streams.
- Alaska Airlines also anticipates flying a demonstration flight on Gevo ATJ fuel produced from sugars derived from saccharification of forestry residuals (slash piles from forest harvest, chips or sawdust from timber production, and residues from pulp and paper processing) through a project with Washington State University's Northwest Advanced Renewables Alliance, recipient of one of the largest USDA NIFA grants.

66 Million Dead Trees in Southern Sierra Nevada

- U.S. Forest Service announced that it has identified an additional 26 million trees dead in California since Oct. 2015.
- Trees located in six counties, 760,000 acres in southern Sierra Nevada region, and are in addition to the 40 million trees that died statewide from 2010 to Oct. 2015, bringing the total to at least 66 million dead trees.
- Four consecutive years of severe drought, dramatic rise in bark beetle infestation and warmer temperatures are leading to historic levels of tree die-off.
- Efforts to protect watersheds and restore forests resilience are being squeezed out of budget; Last year fire management alone consumed 56% of the FS's budget.
- Link to [Photos and video of the May survey](#)



Public-Private Partnership to Help Reduce Wildfire Threat

- U.S. Forest Service and the Natural Resources Conservation Service announced a new partnership with the American Forest Foundation to conduct critical restoration work to address catastrophic wildfire risk across 3.5 million acres of private land in order to protect water supplies for Western communities.
- Combined \$5 million initial investment, Aiming to restore more than 11,000 acres in the first two years.
- A portion of the funds will help AFF and partners including state forestry agencies, conduct outreach and education to 17,500 private landowners in important water supply watersheds.
- The remainder of the funds will provide cost-share dollars directly to landowners in one of the project landscapes, the Upper South Platte Watershed in Colorado.
- Also Rocky Mountain Front, MT; Blue Mountains, OR; Sierra Nevada region, broader CA; Four Corner States (AZ, CO, NW, UT)

Value Proposition of Biobased Plastics

- ASTM International announced a revised standard (D6866) used by the U.S. Department of Agriculture's (USDA) bio-preferred program and the Environmental Protection Agency (EPA) to help improve the sustainability of plastics.
- The revised standard will help these organizations determine which bioplastics are truly “greener” and which fall short in the effort to be sustainable.
- In addition to being used by the USDA and EPA, D6866 is referenced by many large corporations throughout the world that are increasingly using biobased products.
- Determining the biobased carbon content of products using radio carbon analysis as codified in ASTM D6866 and applying fundamental stoichiometric calculations (the calculation of the quantities of reactants and products in chemical reactions) means that one can readily calculate the amount of CO₂ removed from the environment by 1 kg of material. For example:
 - 1 kg of biobased polyethylene (PE) containing 100% biobased carbon content would result in removing 3.14 kg. of CO₂.
 - 1 kg of PLA (100% biobased carbon content) would remove 1.83 kg of CO₂.
 - 1 kg of the current bio PET (20% biobased carbon content) results in 0.46 kg of CO₂ removal.
 - 1kg of the 100% biobased carbon content PET results in 2.29 kg of CO₂ removal.
- More at <http://www.plasticstoday.com/content/scientific-look-value-proposition-biobased-plastics/64462705925007>

“Vegetable Oils Remove Heavy Metals From Water”

- Dangerous lead levels in drinking water in cities across the nation have recently made national headlines.
- Water contaminated with lead, mercury, or other heavy metals poses serious problems for our health and our environment.
- Agricultural Research Service’s (ARS) National Center for Agricultural Utilization Research (NCAUR) in Peoria, Illinois, scientists are investigating safe ways to remove heavy metals from various substances.
- Recently, they developed and patented a new method that uses vegetable oils to remove metals from liquids, solids, and gases.
- Researchers at the Bio-Oils Research Unit have created a chemical process to modify vegetable oils into “functionalized” vegetable oils that effectively separate heavy metal ions from water.
- More information at: <https://agresearchmag.ars.usda.gov/2016/aug/oils/>



Addressing the Challenges & Opportunities of Advancing the Billion Ton Bioeconomy

- Agricultural Technology Innovation Partnership (ATIP) Foundation --- a consortium of State Economic Development organizations --- develop and co-host with a coordinating entity, a series of regional Bioeconomy Forums to garner input from a broad range of stakeholders on the Bioeconomy challenges & opportunities to help shape a multiyear implementation plan, to be prepared by the Biomass R&D Board by the end of the calendar year.
- Foundation will co-host five Bioeconomy Forums throughout the United States, in partnership with the U.S. Departments of Agriculture and Energy.
- Forums are confirmed for Atlanta, Georgia (September 16), Mineral Wells, TX (September 29), Seattle-Tacoma, Washington (October 3), Orono, ME (October 18), and Columbus, OH (November 15)
- Follows listening sessions on the Vision, conducted by USDA and DOE, in April and May through a national webinar and at four major conferences including the 2016 Advanced Bioeconomy Leadership Conference; 2016 International Biomass Conference in Charlotte, NC; World Congress on Industrial Biotechnology in San Diego, CA; and the Symposium on Biotechnology for Fuels and Chemicals in Baltimore, MD.

Thank you!



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

www.usda.gov/energy

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