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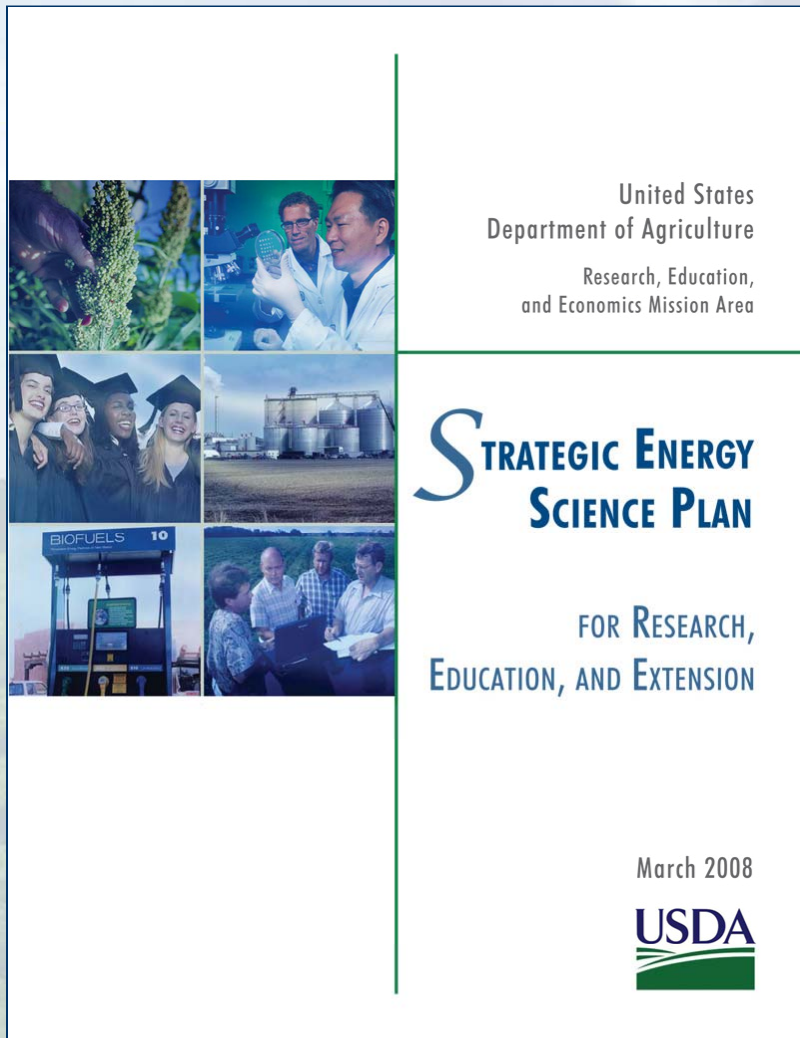
BioEnergy Awareness Days II (BEAD II)



Presented by
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Iowa State University, and
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June 10, 2008

REE Energy Plan



The cover of the 'Strategic Energy Science Plan' report features a grid of six images: a close-up of a plant stem, two scientists in lab coats examining a petri dish, three graduates in caps and gowns, a large industrial silo, a biofuels pump station, and a group of people in a meeting. The text on the cover includes the USDA logo, the title 'STRATEGIC ENERGY SCIENCE PLAN', and the subtitle 'FOR RESEARCH, EDUCATION, AND EXTENSION'.

United States
Department of Agriculture
Research, Education,
and Economics Mission Area

**STRATEGIC ENERGY
SCIENCE PLAN**

FOR RESEARCH,
EDUCATION, AND EXTENSION

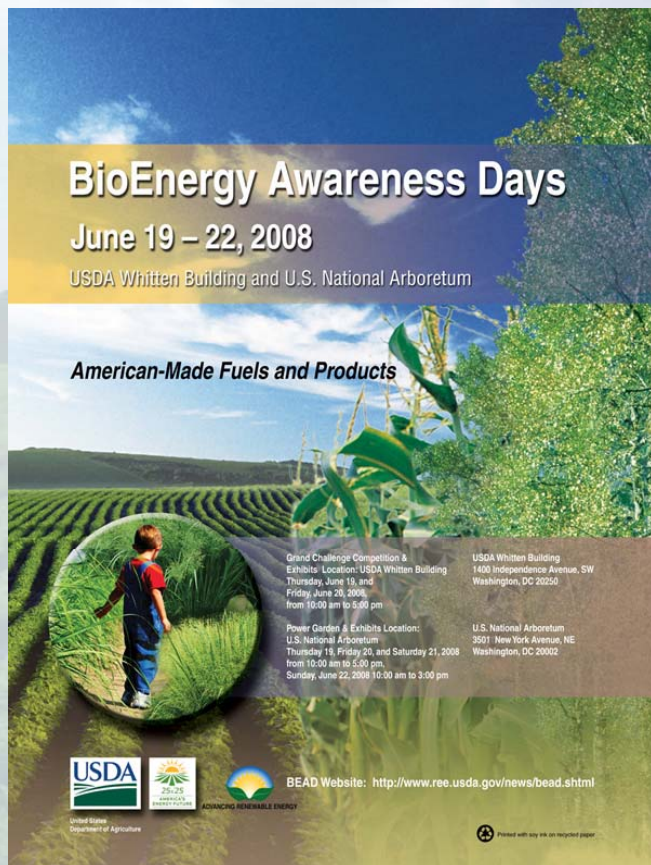
March 2008
USDA

- Energy is a national and international problem.
- USDA/REE and the land grants have a major role in the solution of this problem through research, education, and extension.
- REE/USDA has developed a strategic energy plan to address these issues.
- Goals of the plan include:
 - Sustainable agriculture- and natural resource-based energy production;
 - Sustainable bioeconomies for rural communities;
 - Efficient use of energy and energy conservation; and
 - Workforce development for the bioeconomy



BioEnergy Awareness Days (BEAD) – An Integral Part of Energy Plan

Bio Energy Awareness Days (BEAD) is an annual celebration held on the Summer Solstice to acknowledge the ultimate source of energy is the sun.



BioEnergy Awareness Days
June 19 – 22, 2008
USDA Whitten Building and U.S. National Arboretum

American-Made Fuels and Products

Grand Challenge Competition & Exhibits Location: USDA Whitten Building, 1400 Independence Avenue, SW, Washington, DC 20250
Thursday, June 19, and Friday, June 20, 2008, from 10:00 am to 5:00 pm

Prayer Gardens & Exhibits Location: U.S. National Arboretum, 3501 New York Avenue, NE, Washington, DC 20002
Thursday 19, Friday 20, and Saturday 21, 2008, from 10:00 am to 5:00 pm, Sunday, June 22, 2008, 10:00 am to 3:00 pm

USDA
United States Department of Agriculture

20-25
AMERICAN-MADE
ADVANCING RENEWABLE ENERGY

BEAD Website: <http://www.ree.usda.gov/news/bead.shtml>

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The purpose of this second annual event (BEAD II) is to help increase awareness and knowledge related to the sustainable production of agriculture, forest, and natural resource-based renewable energy and bioproducts; sustainable bioeconomies; the efficient use and conservation of energy for the benefit of rural communities and the Nation; and related workforce development.



USDA Energy Programs

- USDA traditionally has worked on a set of programs related to food, fiber, and forestry.
- In addition to these programs, the Department now has an added responsibility involving energy issues.
- USDA is integrating energy science and education into its programs which adds complications and opportunities.



The New Paradigm

- BEAD is held during the Summer Solstice to acknowledge that the ultimate source of energy is the sun.
- The event is designed to demonstrate the photosynthetic capability of agriculture and forestry to the bioeconomy.
- Most plants make use of only 1 percent of the sunlight that strikes their leaves.
- New discoveries in chemistry, biochemistry, and crop improvement could make energy more of that energy available.



USDA Collaborating for BEAD II

The United States Department of Agriculture and the 25 x '25 Alliance are sponsoring the second annual BioEnergy Awareness Days.

Agencies:

- Agricultural Research Service (ARS)
- Cooperative State Research Education and Extension Service (CSREES)
- Farm Service Agency (FSA)
- Natural Resources Conservation Service (NRCS)
- Forest Service (FS)
- Departmental Administration
- Rural Development



25 X '25 Alliance

- A group of volunteer farm leaders first envisioned the goal of 25x'25 to obtain 25 percent of the nation's energy from renewable resources including wind, solar, and biofuels by the year 2025.
- The Alliance includes leaders from business, labor, conservation and religious groups. 25x'25 is supported financially by the Energy Future Coalition, a non-partisan public policy initiative funded by foundations.
- 25 X '25 now has state level organizations in over 30 states that are addressing the major goals in a state context.



BEAD II

- This year's events include:
 - **Thursday, June 19, 3:30 pm Grand Challenge Award Ceremony at the Whitten Patio**
 - **Thursday, June 19, 10:00-5:00 and Friday, June 20, 10:00 - 3:00 Grand Challenge Winners and Government Agencies and Private Sector Exhibits – Whitten**
 - **Thursday, June 19 through Sunday, June 22 10:00 until 5:00 University and College Exhibits – U.S. National Arboretum**
 - **Saturday, June 21, 1:30 pm Ribbon Cutting for the New “Power Plant” Garden – U.S. National Arboretum**



BEAD II – Grand Challenge Competition Guidelines

- **Participants submit ted 10 page paper which outlined their vision of U.S. agriculture and /or forestry’s contribution to the energy economy in 2017**
- **The papers:**
 - **Demonstrated leadership, diversity, creativity, and innovation.**
 - **Described cooperative avenues for fulfilling this mission, whether within the universities and colleges (e.g. interdisciplinary programs) or collaborations among colleges and universities.**
 - **Defined the role of the university in achieving their vision.**
 - **Outlined the university's contribution to meeting the 25x'25 goal through achievements in four areas:**
 - **Increasing the production of renewable energy and alternative fuels;**
 - **Delivering the new energy to consumers;**
 - **Meeting consumer demand; and**
 - **Enhancing sustainability, conservation and energy efficiency**



BEAD II – Grand Challenge Competition Guidelines (Continued)

- **Judging:**

- **A team from USDA and the 25x25 Alliance judged these papers utilizing the following criteria:**

- **Vision of agriculture’s contribution to the energy economy in 2017 (30 points)**
- **Vision of how the institution will fit into the energy economy in 2017 (20 points)**
- **Vision of the institution’s role in achieving the 25x’25 goal through:**
 - **Research (10 points)**
 - **Extension (10 points)**
 - **Education (10 points)**
- **Vision of transformational processes required to meet the 25x’25 goal (20 points)**



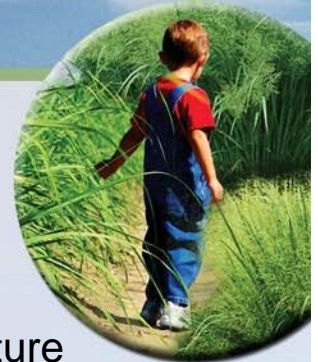
Grand Challenge Award Winners

Northeast

- **West Virginia University** – Woody Biomass Sustainability for Bioenergy Production in West Virginia
- **Cornell University** – Big Red's Big Green Initiatives, Cornell College of Agriculture and Life Science's Vision for the Bioenergy Future

Southern

- **University of Georgia (with the University of Tennessee, Dartmouth College, Georgia Institute of Technology, Oak Ridge National Laboratory and private sector firms)** – Not Your Usual Power Plant. At the University of Georgia, conservation and renewable energy are on fast forward
- **University of Kentucky (with Kentucky State University, University of Louisville, Governor's Office of Energy Policy and private sector partners)** – 25 x '25 Vision for Kentucky
- **Oklahoma State University (with the Sun Grant Initiative)** – Shaping Oklahoma's Renewable Energy Future
- **Auburn University (with Alabama A&M University and Tuskegee University)** – Partnerships: The Pathway to a Vibrant Bioeconomy for Alabama



Grand Challenge Award Winners

continued –

North Central

- **University of Illinois** – Prospects for the New Bioeconomy
- **Kansas State University** – Food, Feed, Energy and Ecosystem Services (FFEE): A Role for American Agriculture
- **The Ohio State University** – Vision of Agriculture and/or Forestry's Contribution to the Energy Economy in 2017
- **Iowa State University** – Iowa State University's Vision for U.S. Agriculture and Forestry's Contribution to the Energy Economy in 2017

Western

- **University of Hawaii (with the State Energy Office of DOE)** – A Systems Approach for Transforming America's Agriculture and Economy from a Fossil to a Fiber-based Energy Future
- **Colorado State University** – Clean Energy Supercluster (CES)
- **University of Arizona (with California Polytechnic State University)** – Cal Poly's Bio Energy Vision: Sustaining Civilization Under Cover



Grand Challenge Award Winners

continued –

1880's

- **Tuskegee University (with Auburn)** – Partnerships: The Pathway to a Vibrant Bioeconomy for Alabama
- **Alabama A&M University (with Auburn)** – Partnerships: The Pathway to a Vibrant Bioeconomy for Alabama

Non land Grant Member of NASULGC BAA

- **California Polytechnic State University (with the University of Arizona)** – Cal Poly's Bio Energy Vision: Sustaining Civilization Under Cover

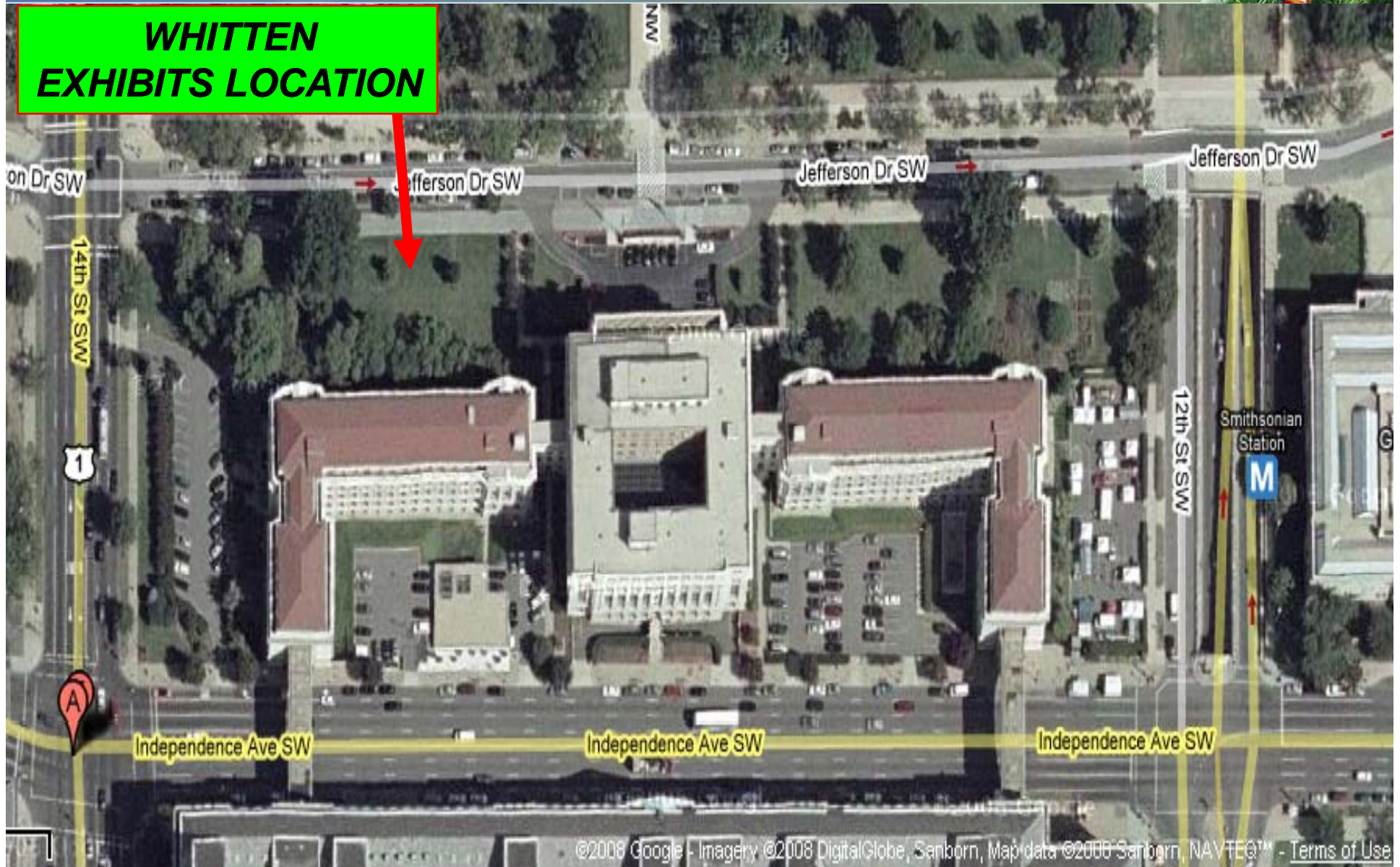
For more information, please visit the BEAD II web site at:

<http://www.ree.usda.gov/news/bead.shtml>



BEAD II - Exhibits Whitten

**WHITTEN
EXHIBITS LOCATION**



Program for Award Ceremony at the Whitten Building to Honor Grand Challenge Winners

Award Ceremony is from 3:30 to 5:00 PM
Thursday, June 19th

Program begins at 3:30 PM

- ❑ Under Secretary Buchanan, Opening Remarks
- ❑ 25X'25 Alliance Speaker - Duane Acker
President Emeritus, Kansas State University,
Former USDA Assistant Secretary for Science and Education
and member, 25X'25 Steering Committee
- ❑ USDA Secretary Shafer Speaks
- ❑ Under Secretary Buchanan Introduces the Grand Challenge
Winners
- ❑ Under Secretary Buchanan Leads Tour of Exhibits



BEAD II – Exhibits Whitten

- **Whitten Building Exhibits:**
 - **Grand Challenge Winners**
 - **USDA Agencies & US Government Departments**
 - **Private Sector (selected by 25x'25)**



List of Agency Exhibitors

- Agricultural Research Service
- National Center of Agricultural Utilization Research
- Eastern Regional Research Center
- Western Regional Research Center
- Plant Science Research – St. Paul, MN
- REAP (Renewable Energy Assessment Project)
- Cooperative State Research Education and Extension Service
- Developmental Administration (DA)
- Economic Research Service
- National Agricultural Statistics
- Natural Resource Conservation Service
- Risk Management Agency (RMA)
- Department of Energy Office of Science
- USDA Energy Council



List of Exhibitors – Private Sector

- Association of Equipment Manufacturers
- United Soybean Board (Supporter)
- Energy Future Coalition
- National Corn Growers Association
- Advanced Biofuels Coalition
- ACORE
- 25x'25
- National Biodiesel Board
- USA Biomass Power Producers Association
- Ethanol representative

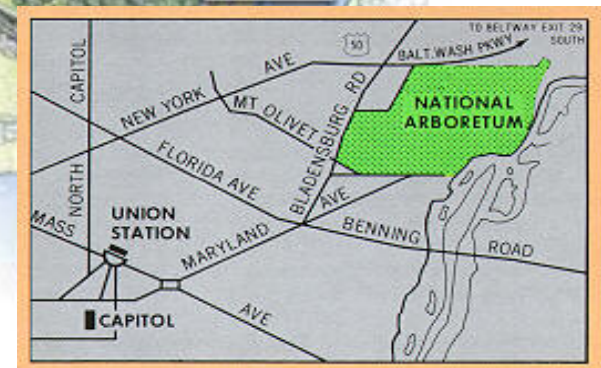
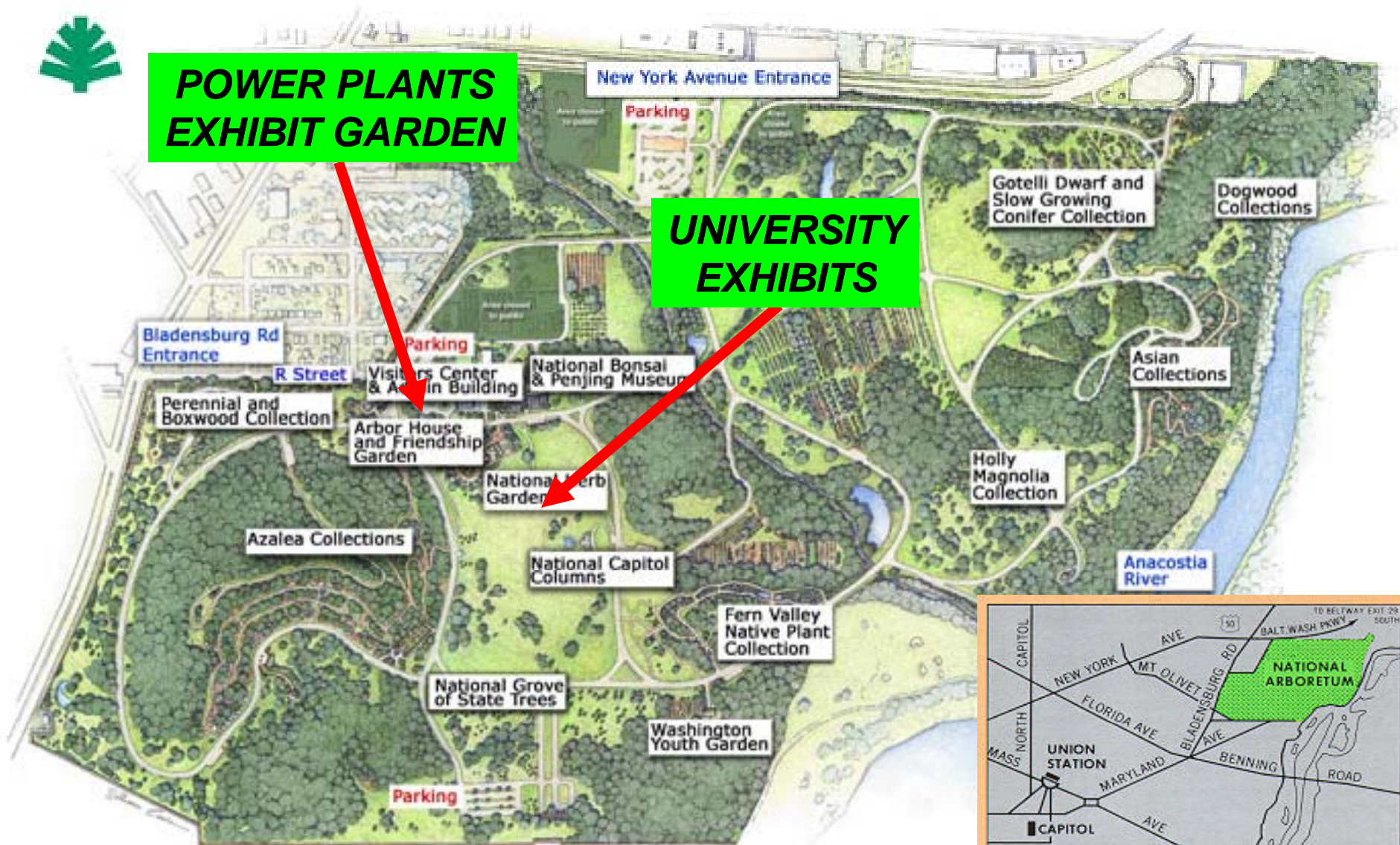


University and Power Plant Garden Exhibits – U. S. National Arboretum



**POWER PLANTS
EXHIBIT GARDEN**

**UNIVERSITY
EXHIBITS**



Program for Award Ceremony at the National Arboretum to Honor University Exhibitors

Reception is from 5:00 to 8:00 PM
Friday, June 20th

Program begins at 6:00 PM

- ❑ Under Secretary Buchanan, Opening Remarks
- ❑ 25X'25 Alliance Speaker - Duane Acker
President Emeritus, Kansas State University, Former Assistant Secretary for Science and Education, and member 25X'25 Alliance Steering Committee
- ❑ Under Secretary Dorr Speaks
- ❑ Under Secretary Buchanan introduces the University Exhibitors and Joins Under Secretary Dorr and 25X'25 Alliance to Honor University Exhibitors
- ❑ Under Secretary Buchanan Leads Tour of University Exhibits



University Exhibits at the National Arboretum

- **Auburn University** - AU is bringing a display of their mobile biomass gasification and combined heat and power generation unit.
- **Cayuga Community College** - The SUNY Cayuga Community College exhibit will highlight a range of biofuel and alternative energy projects currently underway that contribute to the goal of sustainability for the entire community.
- **Cornell University** - Cornell will present interactive learning tools, information and video displays on grass and by-product exhibits.
- **Florida Agricultural & Mechanical University** - FAMU will present an on-farm demonstration model for production of bioenergy from agricultural crops grown by farmers to reduce dependency on fossil fuels.
- **Kansas State University** - This display has a focus on sorghums for production to processing of bio energy feedstock crops, including life size crops plants with a model of harvest to production of ethanol.



University Exhibits at the National Arboretum (cont'd)

- **Lincoln University** - LU will showcase the collaborative research and development for microalgae resources, including a comprehensive cultivating and refining system for mass production and conversion.
- **Louisiana State University Agriculture Center** - The LSU exhibit will showcase research information on bio-fuels from renewable and alternative feedstocks, particularly from sugarcane, sweet sorghum, energy cane and bagasse.
- **Mississippi State University** - The exhibit will showcase ongoing bio-energy research, especially research on bio-fuels using pyrolysis to convert wood into bio-oil.
- **North Carolina State University** - This display will focus on the development of processes and technologies that make use of regional agricultural and forest resources leading to sustainable bio energy solutions.
- **Oklahoma State University** - OSU will provide research information on 2 bioconversion processes - GRASSohol and Sorganol
- **Ohio State University**



University Exhibits at the National Arboretum (cont'd)

- **Penn State University** - The Penn State exhibit will include three New Holland tractors that run on 100% biodiesel.
- **State University of New York at Alfred** - On exhibit will be examples of workforce development in renewable energy with organic agriculture, biodiesel reactor, photovoltaic, wind energy and hydroponics with LED lights.
- **State University of New York at Cobleskill** - This display will describe the technology and efficiency of using a rotary kiln gasification technology for the conversion of agricultural wastes into alternative energy.
- **Sun Grant Initiative** - The exhibit will provide information on the ongoing regional biomass feedstock research in 35 states and territories in partnership with universities, agencies and private sector.



University Exhibits at the National Arboretum (cont'd)

- **Texas A&M University/Texas AgriLife Research** - This display will showcase bioenergy research on feedstock development, agronomics, logistics, modeling, conversion, as well as economics, policy, and environmental evaluations.
- **University of Arkansas** - This will showcase bio energy research on renewable and alternative feedstocks, thermal, chemical and biological conversion of biomass.
- **University of Florida/IFAS** - The exhibit will include examples of their pilot plant and the process for cellulosic ethanol production.
- **University of Georgia** - The University of Georgia will demonstrate the biodiesel and ethanol processes with an autonomous biofuel sipping tractor, oil press, small fermentation tanks and still.



University Exhibits at the National Arboretum (cont'd)

- **University of Hawaii College of Tropical Agriculture** - UH will highlight ongoing research to develop tropical feedstocks for locally produced bioenergy.
- **University of Illinois** - This display will describe the lifecycle of corn, soybeans and switchgrass using current and future technologies.
- **University of Maine** -The display will showcase ongoing bio-fuels research through the Forest Bioproducts Research Initiative.
- **University of Maryland** - The UM display will describe current options for using switchgrass as a biofuel in Maryland.
- **University of Nevada, Reno** - The exhibit will include a poster display and biofuels examples of arid lands biofuels from crops with low water needs.



University Exhibits at the National Arboretum (cont'd)

- **University of Tennessee** - The exhibit will demonstrate growing and harvesting switchgrass for generation of electricity and provide 10 biofuels fact sheets for distribution.
- **University of Tennessee Extension** - The UT Extension display will address the economics of alternative switchgrass production, harvesting practices and the contracting process.
- **Utah State University** - Freeway to Fuel - A Novel Approach to Biofuel Production.
- **Washington State University** - This display will feature biofuels and bioproducts research with video and handouts.



Program for Ribbon Cutting for the Power Plant Garden at the National Arboretum

Ribbon Cutting Ceremony is from 1:30 to 3:00 PM
Saturday, June 21st

Program begins at 1:30 PM and ends at 2:00 PM

- Tom Elias, Director, National Arboretum
- Under Secretary Buchanan, Opening Remarks
- 25X'25 Alliance Speaker, R. Bruce Arnold
Consultant Biomass Utilization for Pulp and Paper,
Director of Pulp Assets, Scott Paper Company,
Member 25X'25 Alliance Steering Committee
- Raymond L. Orbach, Director, Office of Science, DOE
- Under Secretary Rey
- Under Secretary Buchanan Leads Tour of
Power Plant Garden and University Exhibits



Plant-based Biofuel Garden & Exhibit

U.S. National Arboretum

Theme: A range of plants that are grown in the United States that are or have potential to be used as renewable energy source.

Goals and Objectives:

Goal 1: To display living plants that are sources of biofuels or have the potential to provide biofuels.

Goal 2: To show ways that fuel may be derived from plants.

Goal 3: To show how USDA is involved in plant-based biofuels development.

Goal 4: To show how plant biofuels relate to the USDA's mission.

Goal 5: To show how plant biofuels are good for the national economy and security.

Goal 6: To show how plant biofuels can be a sustainable source of energy.

Goal 7: To promote conservation of fuels and energy efficiency.



Candidate Plants for Biofuel Garden



Corn
Barley
Sorghum
Sugar beet
Sunflower
Soybean
Canola
Camelina
Castor bean
Peanut
Lesquerella
Mustard
Sugar cane
Switchgrass
**Hybrid
popular**
Miscanthus
Alfalfa
Jatropha
Cuphea
Babassou
Palm
**African Oil
Palm**
Algae

U. S. National Arboretum



Award Ceremonies/Ribbon Cutting and Receptions

- Grand Challenge Winners
- University and College Exhibitors
- Power Plant Garden



Energy Plan Key Activity – BEAD II

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