

USDA Biomass Research Centers & ARS Contributions

Background Briefing Information
January 12, 2011

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Biomass Production Systems
USDA Agricultural Research Service



UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service



In This Presentation

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Leadership Structure

Research Objectives & Efforts Supporting
Sustainable Biomass Production

Center Operation Details



Overview of Biomass Research Centers



USDA Regional Biomass Research Centers

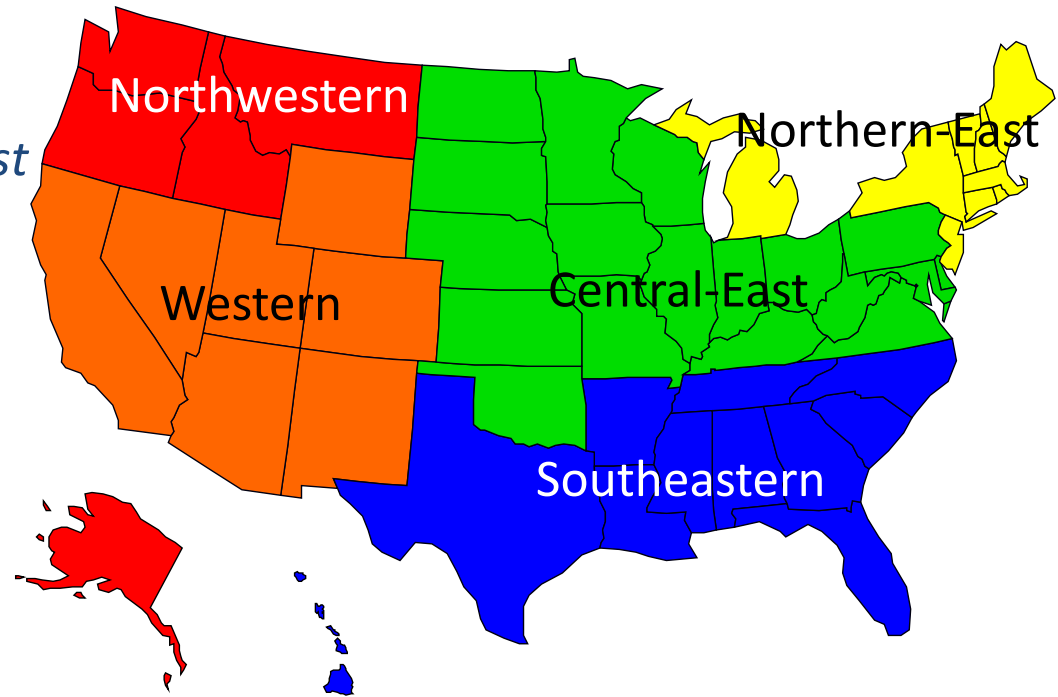
Overview

- Networks of *existing* ARS and FS research locations.
- Leverage current USDA nation-wide capacity to lead sustainable biomass production research.
- Coordinate ARS and FS research occurring across different locations into a comprehensive program.
- Coordination of intramural research agency and NIFA's AFRI Bioenergy Coordinated Agricultural Projects (CAP) and other extramural region-based projects.

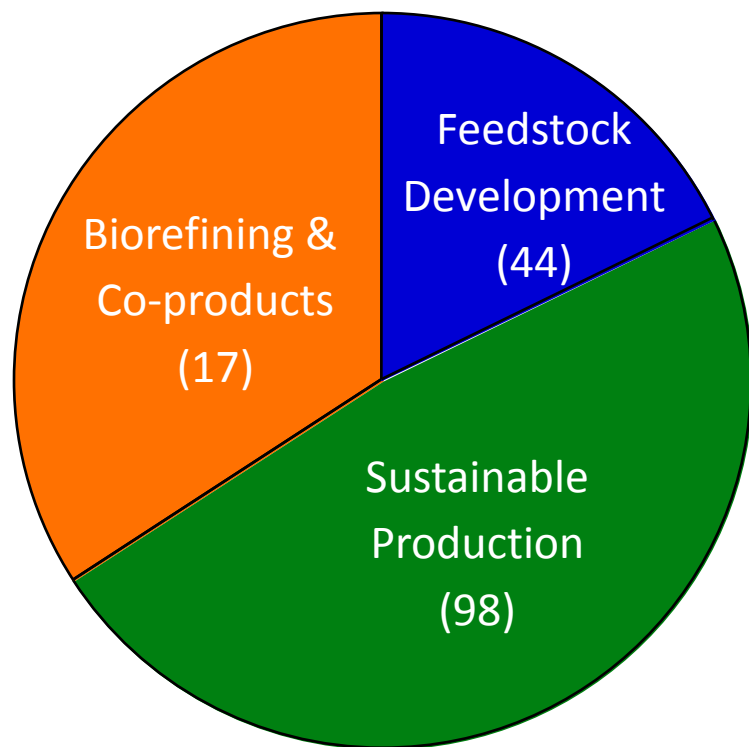
USDA Regional Biomass Research Centers

Hubs and Agency Leadership

- **Central-East** (*Lincoln, NE – ARS*)
- **Southeastern** (*Auburn, AL – Forest Service ; Booneville, AR & Tifton, GA – ARS*)
- **Northern-East** (*Madison, WI – Forest Service*)
- **Western** (*Maricopa, AZ – ARS*)
- **Northwestern** (*Corvallis, OR – Forest Service; Pullman, WA – ARS*)



ARS Financial Support for Biomass Research Centers



Research component	Current	Current & contributing
	\$-million	
Feedstock development	6.1	11.3
Sustainable production	9.8	30.2
Biorefining & co-products	17.9	19.2

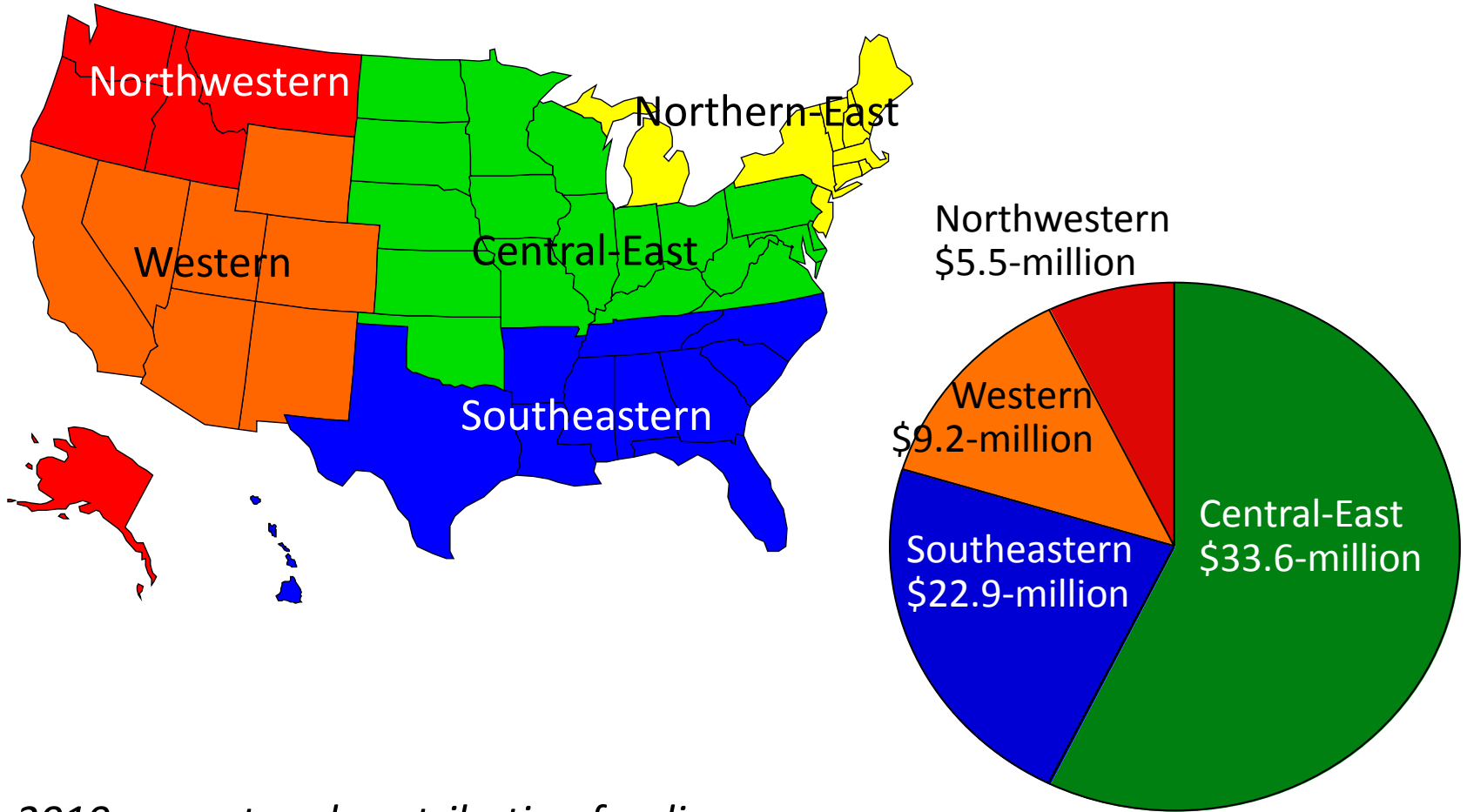
Identified 2010 current: \$34-million; and current & contributing funding: \$61-million, 147 projects (no funds or personnel moved)

ARS Contributions to the USDA Biomass Research Centers

*Projects current & contributing funding: \$61-million,
147 projects (no funds or personnel moved)*

Projects	Number	\$-million	Percentage
Officially contributing	54	37.2	61.3
<i>Ad hoc</i> contributions	63	16.5	27.2
Identified for contributing	30	7.0	11.5

ARS Financial Support for Biomass Research Centers

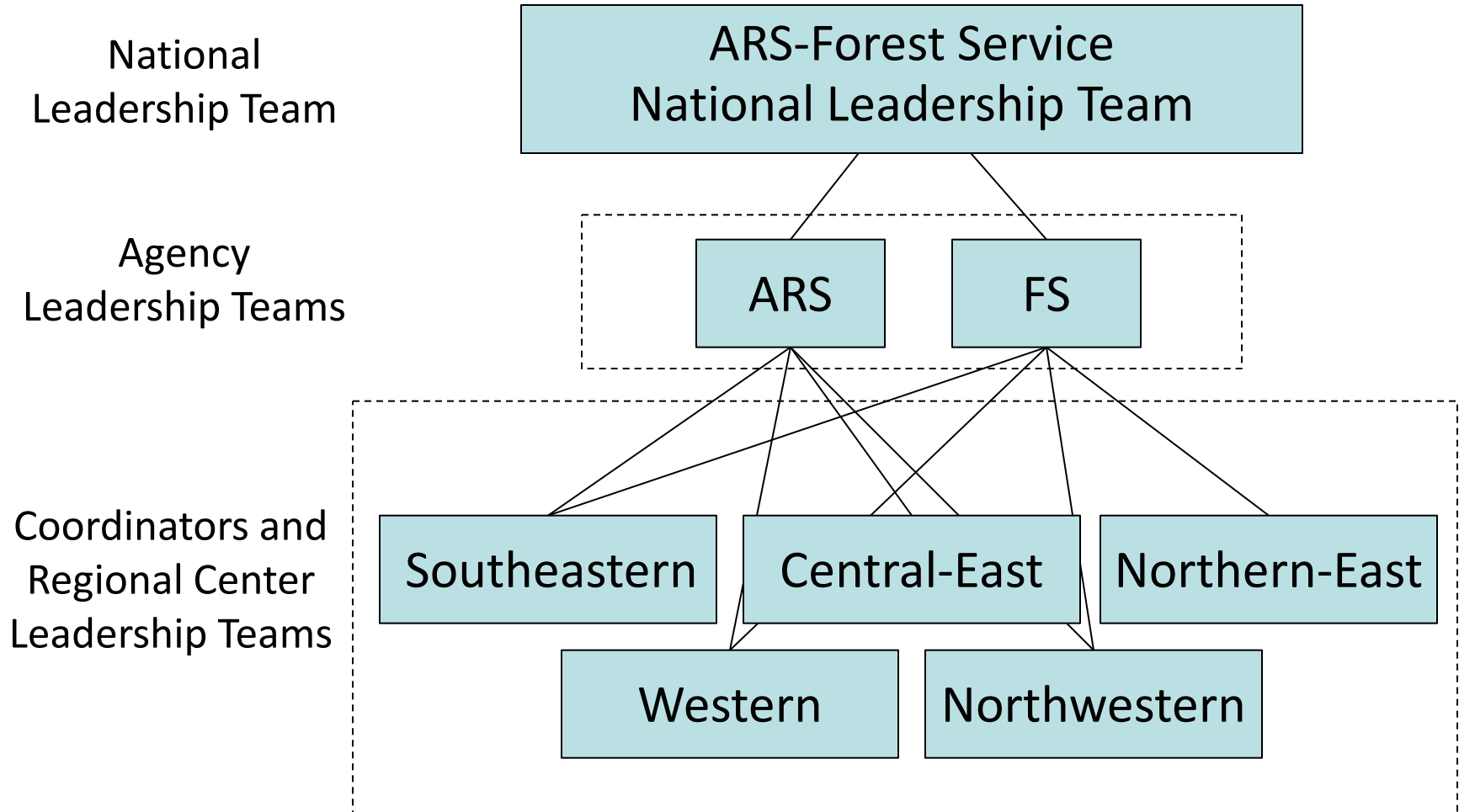


2010 current and contributing funding

Leadership Structure



Leadership of the Biomass Research Centers



Leadership of the Biomass Research Centers

ARS-Forest Service National Leadership Team

Responsibilities

Coordinates interagency activities and communications.

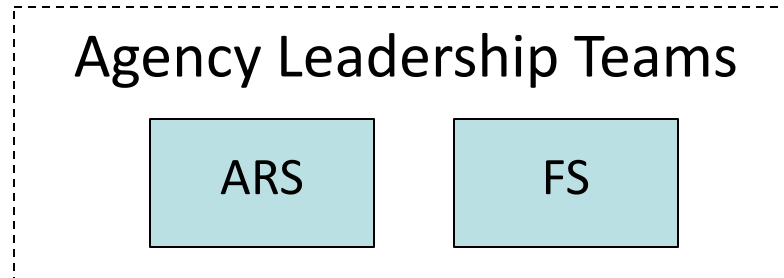
Provides Department and respective headquarters input to Agency Leadership Teams.

Provides directional leadership for Department initiatives.

ARS-Forest Service National Leadership Team

Jeffrey Steiner (ARS) and Marilyn Buford (FS) – Agency Leads
Steve Shafer (ARS), Bob Fireovid (ARS), Carlos Rodriguez-Franco (FS),
Rob Doudrick (FS), and Chris Risbrudt (FS)

Leadership of the Biomass Research Centers

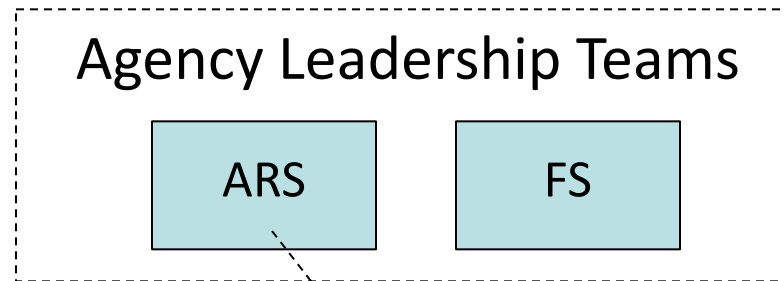


Responsibilities

Provide overall agency-wide coordination of research and partnership activities and communications among the five regional centers.

Provide recommendations for optimizing center operations and for the utilization of resources.

Leadership of the Biomass Research Centers



ARS Leadership Team

Jeff Steiner, Chairperson

Deputy Administrators: Steve Shafer and Kay Simmons

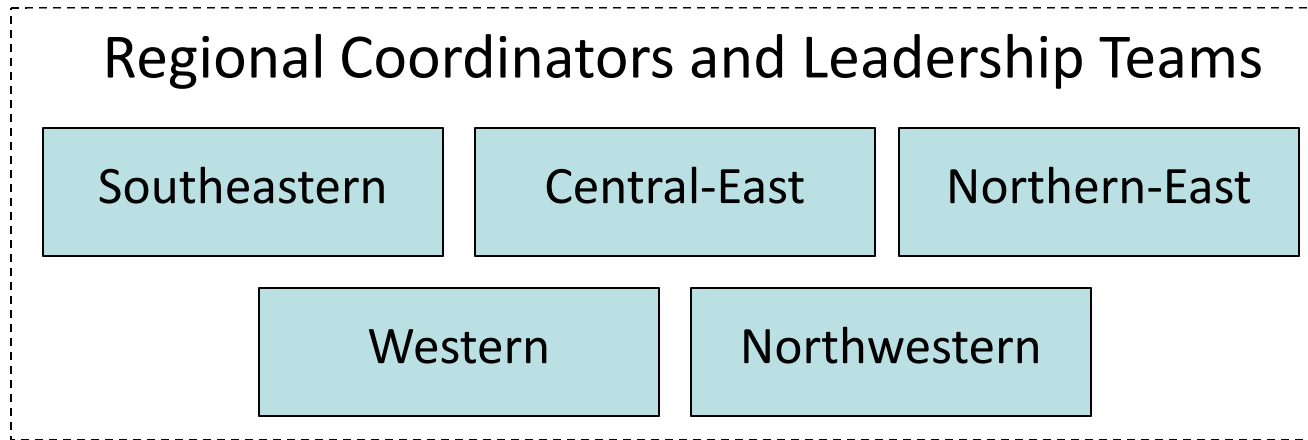
National Program Leaders: Bob Fireovid and ONP Representatives

Office of Technology Transfer: Rob Griesbach

Information Staff: Tara Weaver-Missick

Area Directors: Deborah Brennan, Andy Hammond, and Will Blackburn

Leadership of the Biomass Research Centers



Responsibilities

The regional coordinators are senior scientists primarily responsible for helping the Agency Leadership Team maintain communications among contributing researchers and outside partners and stakeholders.

The coordinators and regional leadership team provide up-to-date information and recommendations to the Agency Leadership Team.

Provide recommendations for optimizing center operations, but do not determine how resources are utilized across the regional networks.

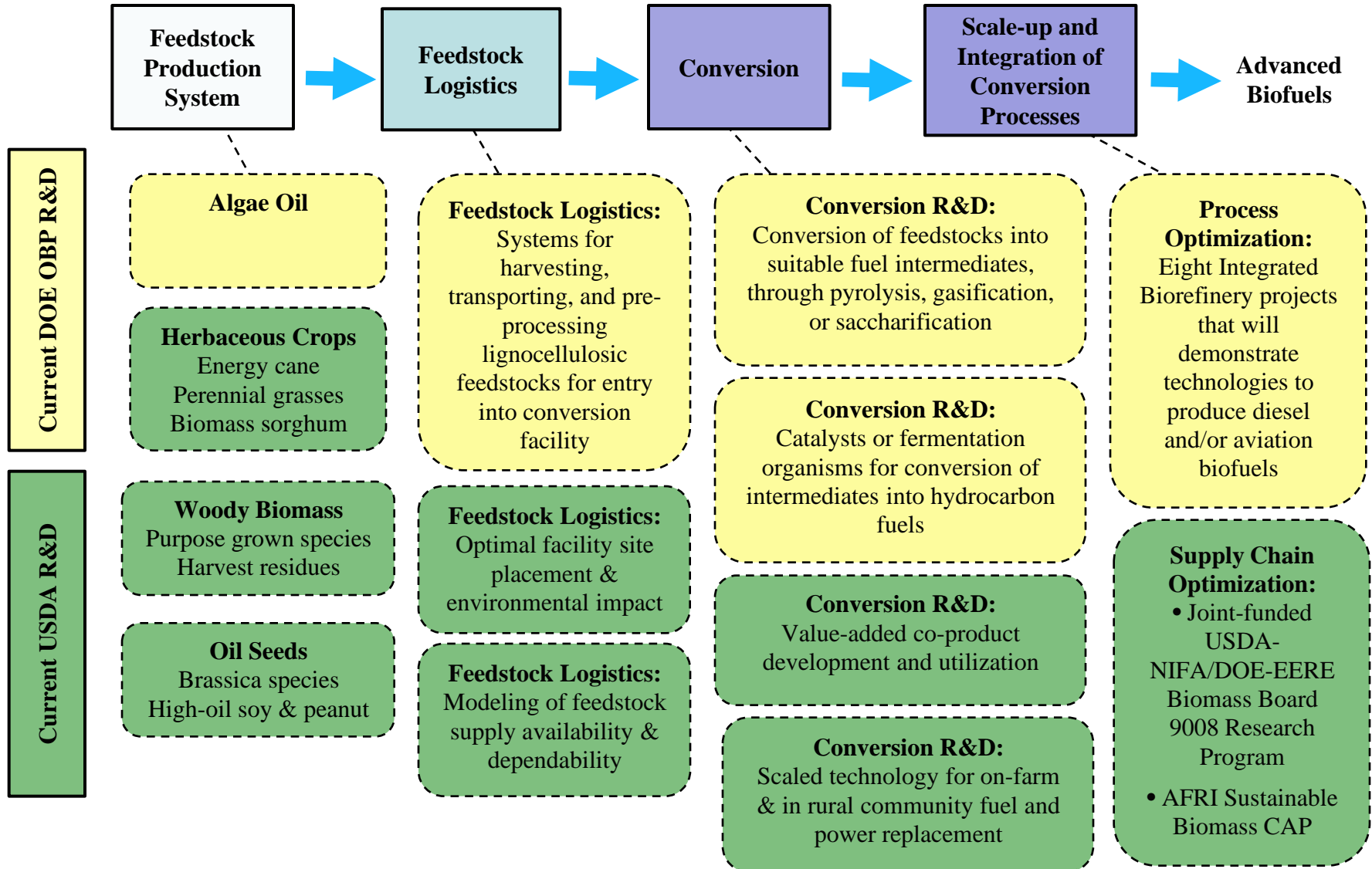
Research Objectives & Efforts Supporting Sustainable Biomass Production



Research Objectives Supporting Sustainable Biomass Production

- Increase biomass production efficiency to increase grower profits and reduce biorefinery transaction costs.
- Optimally incorporate biomass and other dedicated feedstocks into existing agriculture and forestry-based systems.
- Address the uncertainties of expanded production up-front to avoid negative impacts on existing markets and ecosystem services.
- Develop and utilize new value-added coproducts to help enable commercially preferred biorefining technologies.

USDA and DOE Research Domains



USDA Biomass Research Supporting Advanced Biofuels

Feedstock Production System

Increase biomass production efficiency to increase grower profits and reduce biorefinery transaction costs.

Optimally incorporate biomass and dedicated feedstock crops into existing agriculture and forestry-based systems.

Address the uncertainties up-front to avoid negative impacts on existing markets and ecosystem services.

Algae Oil

Herbaceous Crops

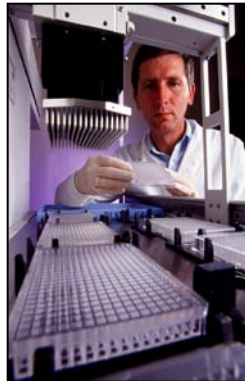
Energy cane
Perennial grasses
Biomass sorghum

Woody Biomass

Purpose grown species
Harvest residues

Oil Seed Crops

Brassica species
High-oil soy & peanut



- *Genetic mapping and enhanced populations, varieties, and hybrids with improved traits.*

- *Reduce input costs – nutrient and waste utilization & waste water reuse*



- *Conservation practices development – natural resources enhancement/energy efficiency*
- *Co-product development & value-added traits*

USDA Biomass Research Supporting Advanced Biofuels

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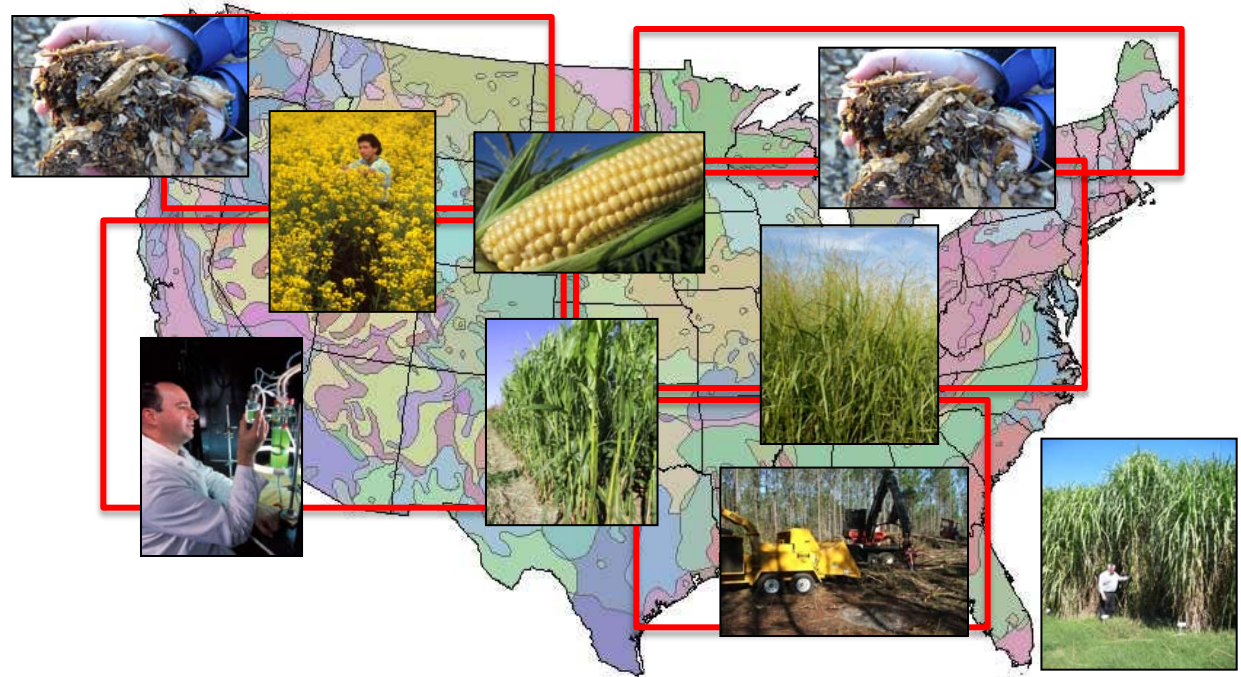
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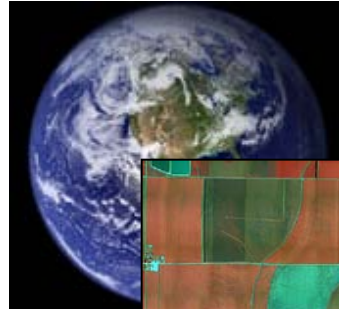
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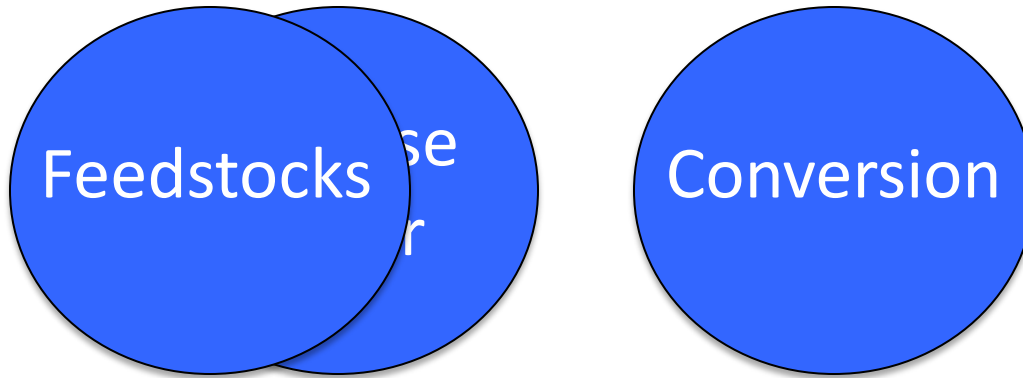
Oil Seeds

Brassica species
High-oil soy & peanut



- *Estimate feedstock supply dependability*
- *Modeling and methods development of soil, water, air quality and other ecosystem services*
- *Evaluation and management of ecosystem services*
- *Many objective optimization for multifunctional landscape use*
- *Impacts on existing food, feed, fiber markets*

Whole Government Effort to Support Development of Advanced Biofuels



A complete supply chain systems approach



Center Operation Details



Biomass Research Centers are Operational

Emphasis on Partnerships

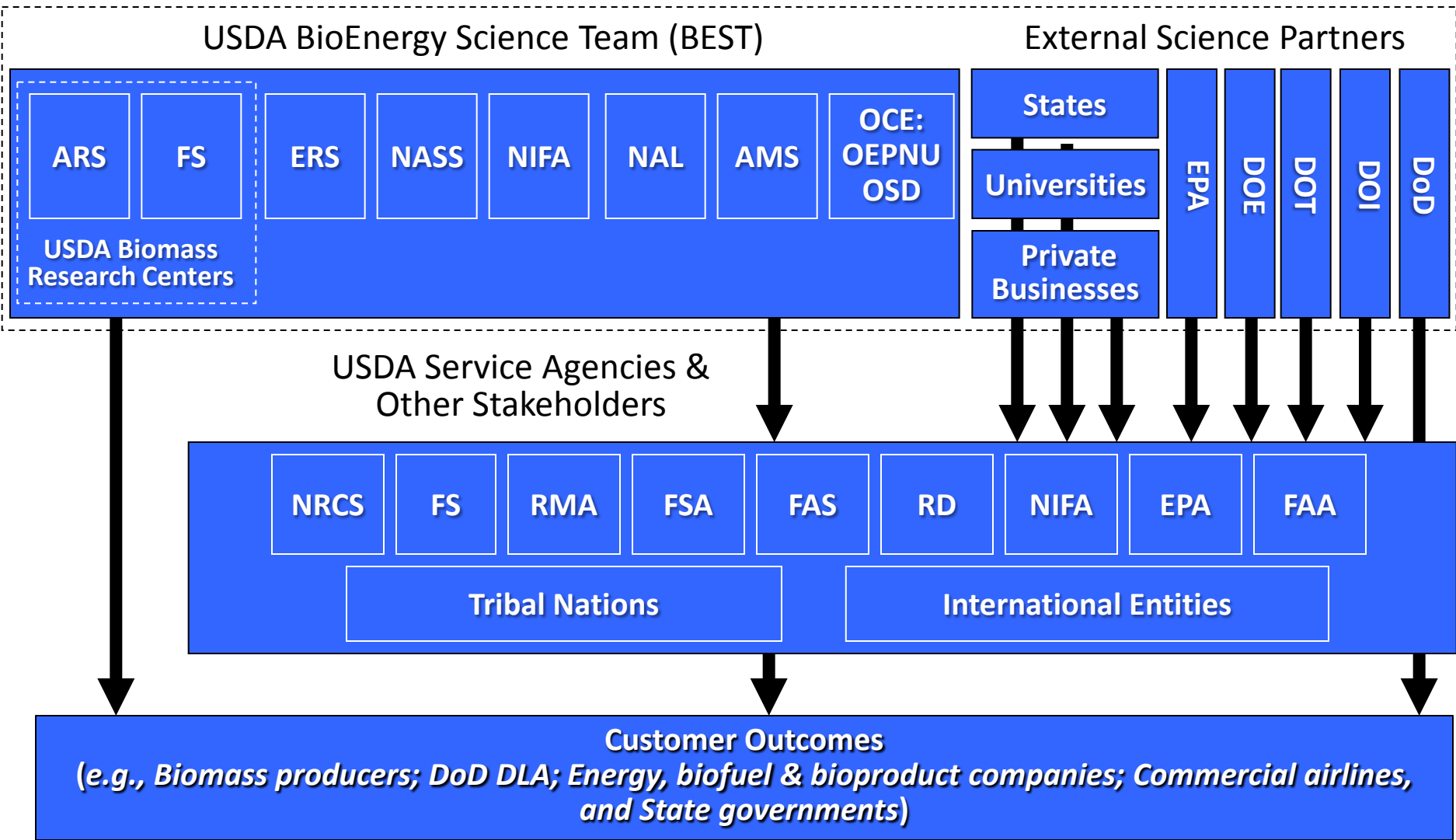
The centers will coordinate their efforts with USDA service agency programs and other Federal agencies

Coordinate with universities with inclusion of educational and extension goals

Target partnerships that include 1890's, Tribal Nations, & Hispanic Serving Institutions participation

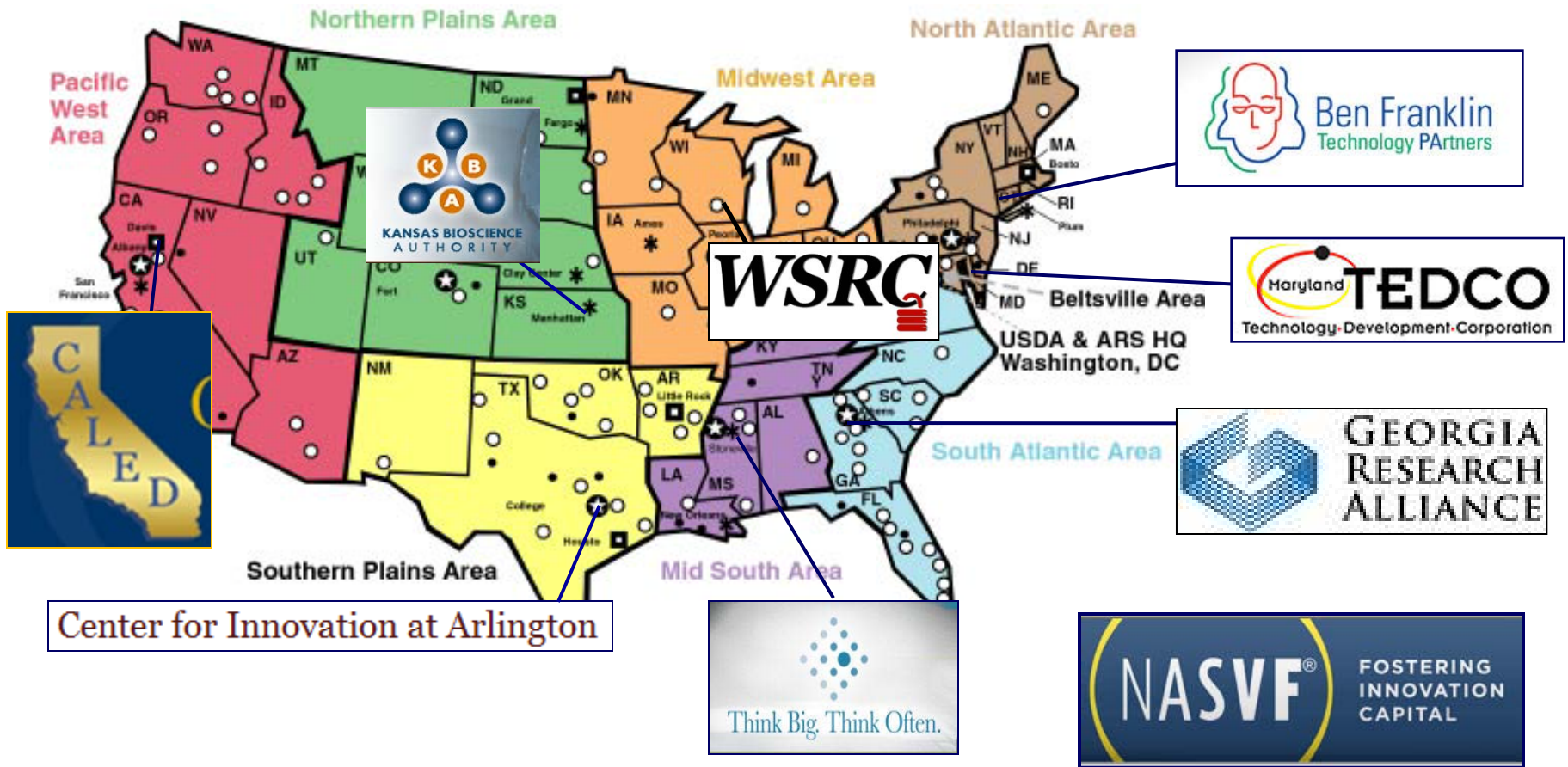
Identifying technology innovation partnerships and other commercial opportunities

USDA-Wide Bioenergy Research*



Biomass Research Centers are Operational

Emphasis on Partnerships



Agricultural Technology Innovation Partnership Network

Biomass Research Centers are Operational

Emphasis on Partnerships

ARS-university partnerships through NIFA/AFRI CAP
Sustainable Biomass Project proposals

Navy-USDA MOU: Office of Naval Research funding to ARS –
Feedstock Supply Dependability Modeling

FAA-ARS-OEPNU *Feedstock Readiness Tool* development

ARS Energy Cane Genetic Improvement Consortium

Monsanto bioenergy grass buffer drift mitigation white paper

China NEA-DOE-USDA MOU: ARS-ZTE Research Center –
sweet sorghum development

Sweet Potato to Biofuel Exploration Team – domestic and
international economic development

Biomass Research Centers are Operational

Emphasis on Partnerships

ARS scientist participation in university preparation of NIFA grant proposals

Research component	AFRI CAP	BRD Board Initiative
	number	
Proposals with ARS Co-PI	15	8
ARS Scientists participants	56	13

Biomass Research Centers are Operational

Next Steps

Regional Leadership Teams – Continued development

Expansion of region-based partnership, including identification of commercial partners

Finish draft of research action plan
(identify region-specific research projects & needed resources)

ARS National Customer-Stakeholder Workshop
scheduled for March 28-31, 2011

Implementation of communication strategy – establishment of Website and accomplishment reporting