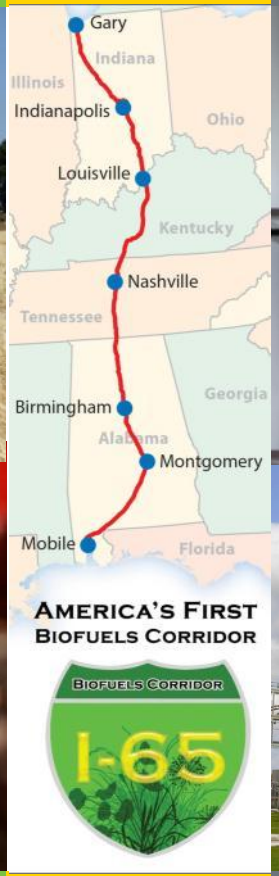
Bioenergy Technologies Office

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy



Webinar: Using the New Bioenergy KDF for Data Discovery and Research

October 24, 2013
2:00 - 3:00 p.m.

Presenters

- Office Overview and KDF Introduction:
  - Alison Goss Eng, Ph.D.
  - Operations Supervisor
  - Acting Program Manager for Feedstocks
  - Bioenergy Technologies Office
- KDF Demonstration:
  - Aaron Myers
  - Geospatial Systems Architect
  - Oak Ridge National Lab

Bioenergy Technologies Office Webinar Series

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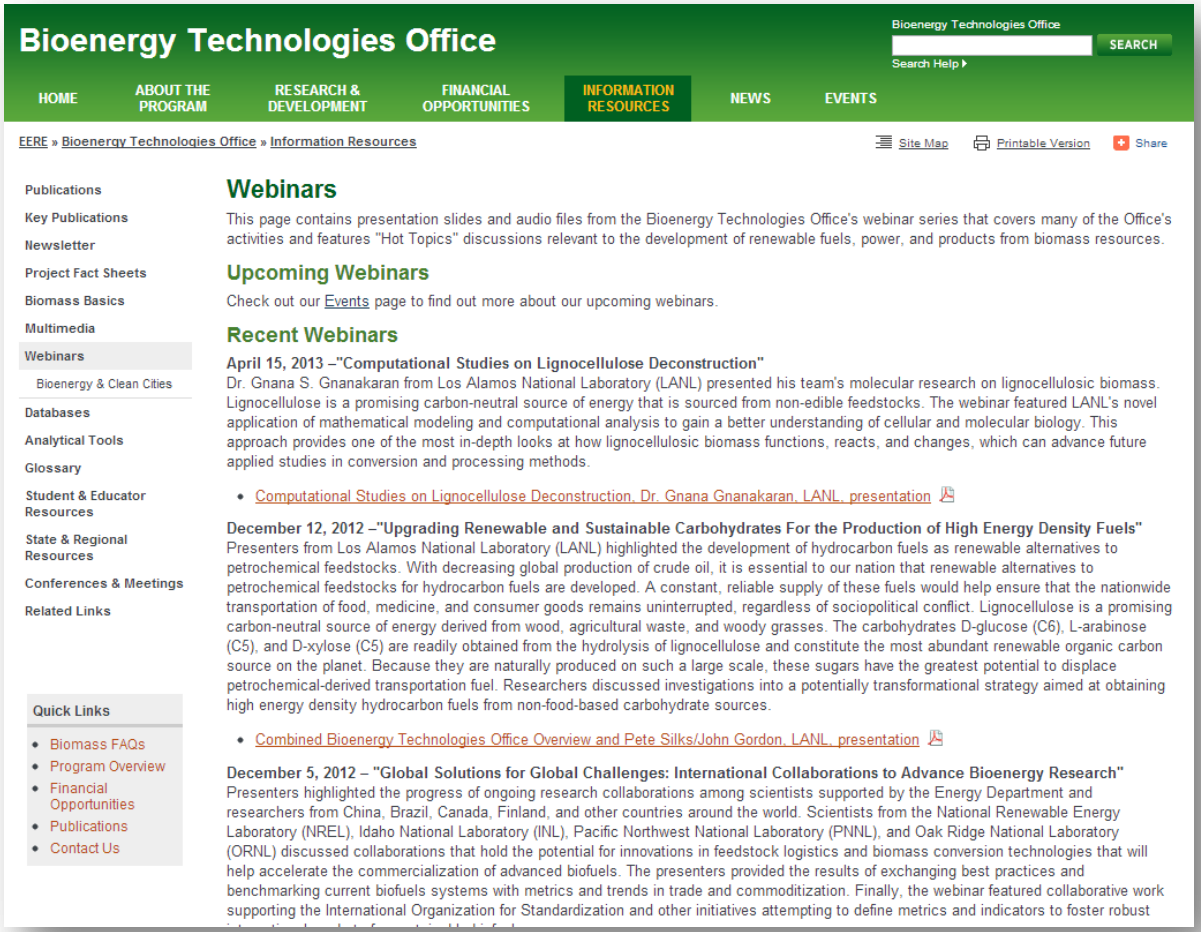
Started in May 2010 to highlight “hot topics” in biomass and bioenergy industry.

Find past webinars and today’s slides on the Office’s website: bioenergy.energy.gov/webinars.html



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Webinars

This page contains presentation slides and audio files from the Bioenergy Technologies Office's webinar series that covers many of the Office's activities and features "Hot Topics" discussions relevant to the development of renewable fuels, power, and products from biomass resources.

Upcoming Webinars

Check out our Events page to find out more about our upcoming webinars.

Recent Webinars

April 15, 2013 –"Computational Studies on Lignocellulose Deconstruction"
Dr. Gnana S. Gnanakaran from Los Alamos National Laboratory (LANL) presented his team's molecular research on lignocellulosic biomass. Lignocellulose is a promising carbon-neutral source of energy that is sourced from non-edible feedstocks. The webinar featured LANL's novel application of mathematical modeling and computational analysis to gain a better understanding of cellular and molecular biology. This approach provides one of the most in-depth looks at how lignocellulosic biomass functions, reacts, and changes, which can advance future applied studies in conversion and processing methods.

- Computational Studies on Lignocellulose Deconstruction, Dr. Gnana Gnanakaran, LANL, presentation

December 12, 2012 –"Upgrading Renewable and Sustainable Carbohydrates For the Production of High Energy Density Fuels"
Presenters from Los Alamos National Laboratory (LANL) highlighted the development of hydrocarbon fuels as renewable alternatives to petrochemical feedstocks. With decreasing global production of crude oil, it is essential to our nation that renewable alternatives to petrochemical feedstocks for hydrocarbon fuels are developed. A constant, reliable supply of these fuels would help ensure that the nationwide transportation of food, medicine, and consumer goods remains uninterrupted, regardless of sociopolitical conflict. Lignocellulose is a promising carbon-neutral source of energy derived from wood, agricultural waste, and woody grasses. The carbohydrates D-glucose (C6), L-arabinose (C5), and D-xylose (C5) are readily obtained from the hydrolysis of lignocellulose and constitute the most abundant renewable organic carbon source on the planet. Because they are naturally produced on such a large scale, these sugars have the greatest potential to displace petrochemical-derived transportation fuel. Researchers discussed investigations into a potentially transformational strategy aimed at obtaining high energy density hydrocarbon fuels from non-food-based carbohydrate sources.

- Combined Bioenergy Technologies Office Overview and Pete Silks/John Gordon, LANL, presentation

December 5, 2012 – "Global Solutions for Global Challenges: International Collaborations to Advance Bioenergy Research"
Presenters highlighted the progress of ongoing research collaborations among scientists supported by the Energy Department and researchers from China, Brazil, Canada, Finland, and other countries around the world. Scientists from the National Renewable Energy Laboratory (NREL), Idaho National Laboratory (INL), Pacific Northwest National Laboratory (PNNL), and Oak Ridge National Laboratory (ORNL) discussed collaborations that hold the potential for innovations in feedstock logistics and biomass conversion technologies that will help accelerate the commercialization of advanced biofuels. The presenters provided the results of exchanging best practices and benchmarking current biofuels systems with metrics and trends in trade and commoditization. Finally, the webinar featured collaborative work supporting the International Organization for Standardization and other initiatives attempting to define metrics and indicators to foster robust

Questions and Comments

Please type any questions into the question box during the webinar. The presenter will answer as many as possible during the Q&A period.

All slides from this presentation will be posted online within three weeks:
www.eere.energy.gov/bioenergy/webinars.html

For general questions regarding the Bioenergy Technologies Office, please email us at:
eere_biomass@ee.doe.gov

Bioenergy Technologies Office Vision, Mission, and Strategic Goal

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Vision

A viable, sustainable domestic biomass industry that:

- Produces renewable biofuels, bioproducts, and biopower
- Enhances U.S. energy security
- Reduces our dependence on oil
- Provides environmental benefits, including reduced greenhouse gas (GHG) emissions
- Creates economic opportunities across the nation.

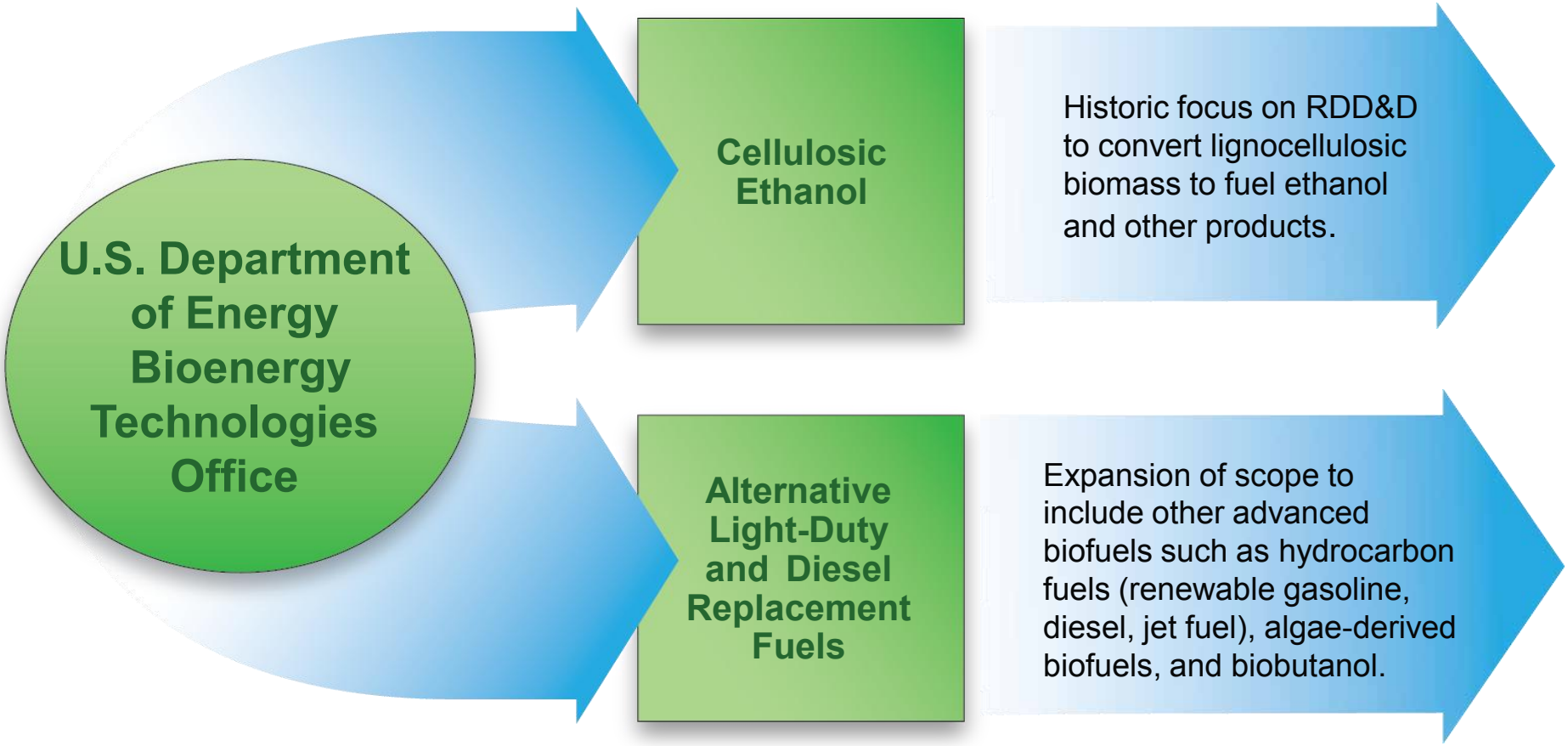
Mission

Develop and transform our renewable biomass resources into commercially viable, high-performance biofuels, bioproducts, and biopower through targeted research, development, demonstration, and deployment (RDD&D) supported through public and private partnerships.

Strategic Goal

Develop commercially viable biomass technologies to enable the production of biofuels nationwide and reduce dependence on foreign oil through the creation of a new domestic bioenergy industry, thus supporting the EISA goal of 36 billion gallons per year of renewable transportation fuels by 2022, and increase biopower's contribution to national renewable energy goals by increasing biopower generating capacity.

Expanding Scope



The Bioenergy Technologies Office forms cost-share partnerships with key stakeholders to develop, demonstrate, and deploy technologies for advanced biofuels, bioproducts, and biopower from lignocellulosic and algal biomass.

The Role of Bioenergy

1. The need to reduce dependence on foreign oil and lower GHG emissions has renewed the urgency for developing sustainable biofuels, bioproducts, and biopower.

2. The transportation sector accounts for about two-thirds of U.S. oil consumption and contributes to one-third of the nation's GHG emissions.

3. Near-term, biomass is the only renewable resource that can supplement petroleum-based liquid transportation fuels, while reducing GHG emissions.

Biomass includes agricultural residues, forest resources, perennial grasses, woody energy crops, wastes (municipal solid waste, urban wood waste, and food waste), and algae, as well as other sources. It is unique among renewable energy resources in that it can be converted to fuels and chemicals—in addition to power.

What is the Bioenergy KDF?

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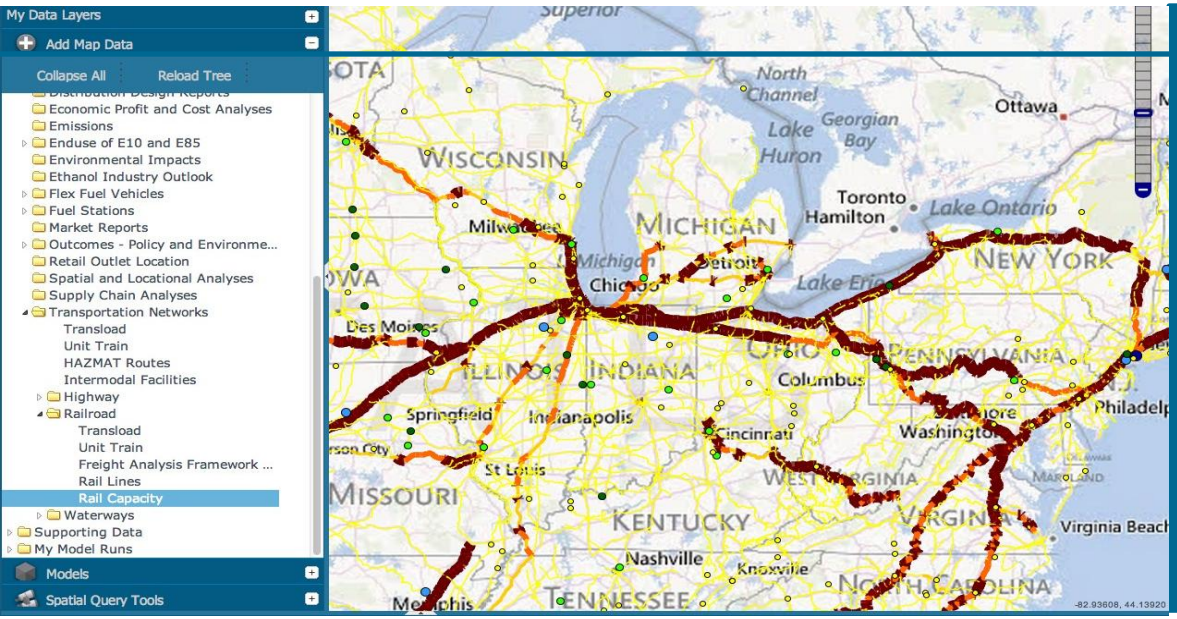
The Bioenergy Knowledge Discovery Framework (KDF) is a collaborative decision-support environment designed to foster bioenergy research by integrating data, models, and visualization tools available from across government, private industry, and academia.



KNOWLEDGE DISCOVERY

Study at the intersection of computer and data sciences which enhances decision making through the analysis of dynamic databases of information and patterns

Motivation for the KDF

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Harnessing Data

- **Agencies make large investments in collecting and producing data and developing institutional knowledge**
  - Effort is needed to make the data and knowledge searchable, accessible, and usable
- **Isolated data silos lead to "information fragmentation"**
  - Large data volumes, distributed sites
  - Limited access to data, information, tools
  - Difficult to form a holistic view

Answering Key Questions

- How can we sustainably produce and deliver future energy crops?
- In what ways can existing regional feedstock production be enhanced?
- Where is best location for future infrastructure in order to leverage existing or high potential feedstock production?
- What are the best strategies for market penetration of biofuels?

Goal: Provide data analysis, synthesis, and visualization capabilities that facilitates informed decision making

Goal: Efficient planning, development, and management of U.S. bioenergy infrastructure

What is in the Bioenergy KDF?

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Geospatial Data

- Map
- ~1400 curated spatial data sources

Publications, links, and resources

- Bioenergy Library
- ~200 curated resources describing models and important journal articles
- Over 100 web resources

Models for simulating and analyzing geospatial data

- Tools & Apps

Robust user community

- Researchers
  Government
  Industry
  Public
- Over 1000 registered users

KDF History

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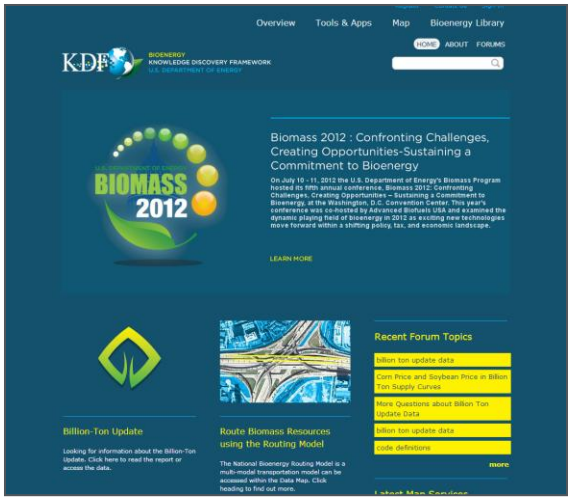
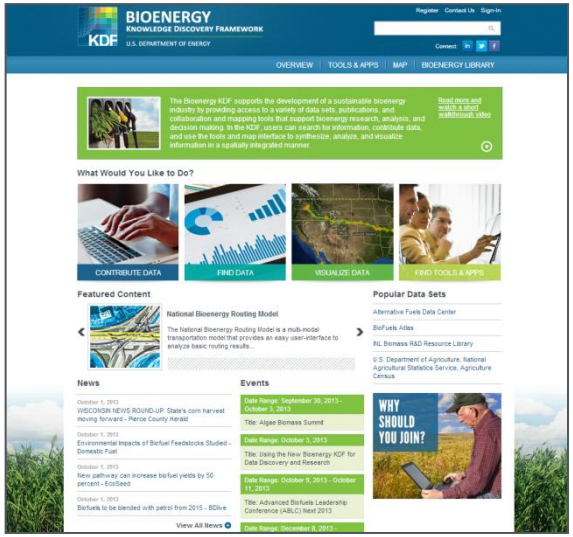
Initial Release

- Launched in January, 2011
- Success stories of first launch
  - Billion-Ton Update
    - Over 5,000 map views and 3,500 data downloads
  - Biomass Scenario Model
    - Private user community for sharing data amongst researchers



Revamping Effort

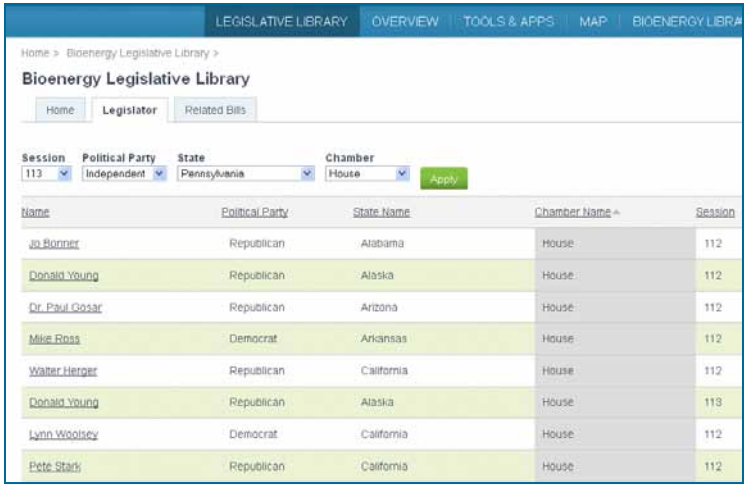
- User feedback collected over four focus group sessions
- Revamped site released: September 19, 2013
  - New look and feel
  - Streamlined layout for easier usability
  - Enhanced descriptions and guidance
  - New functionalities in Bioenergy Library and Map
- Hundreds of visitors since release (339 on Sept 19)



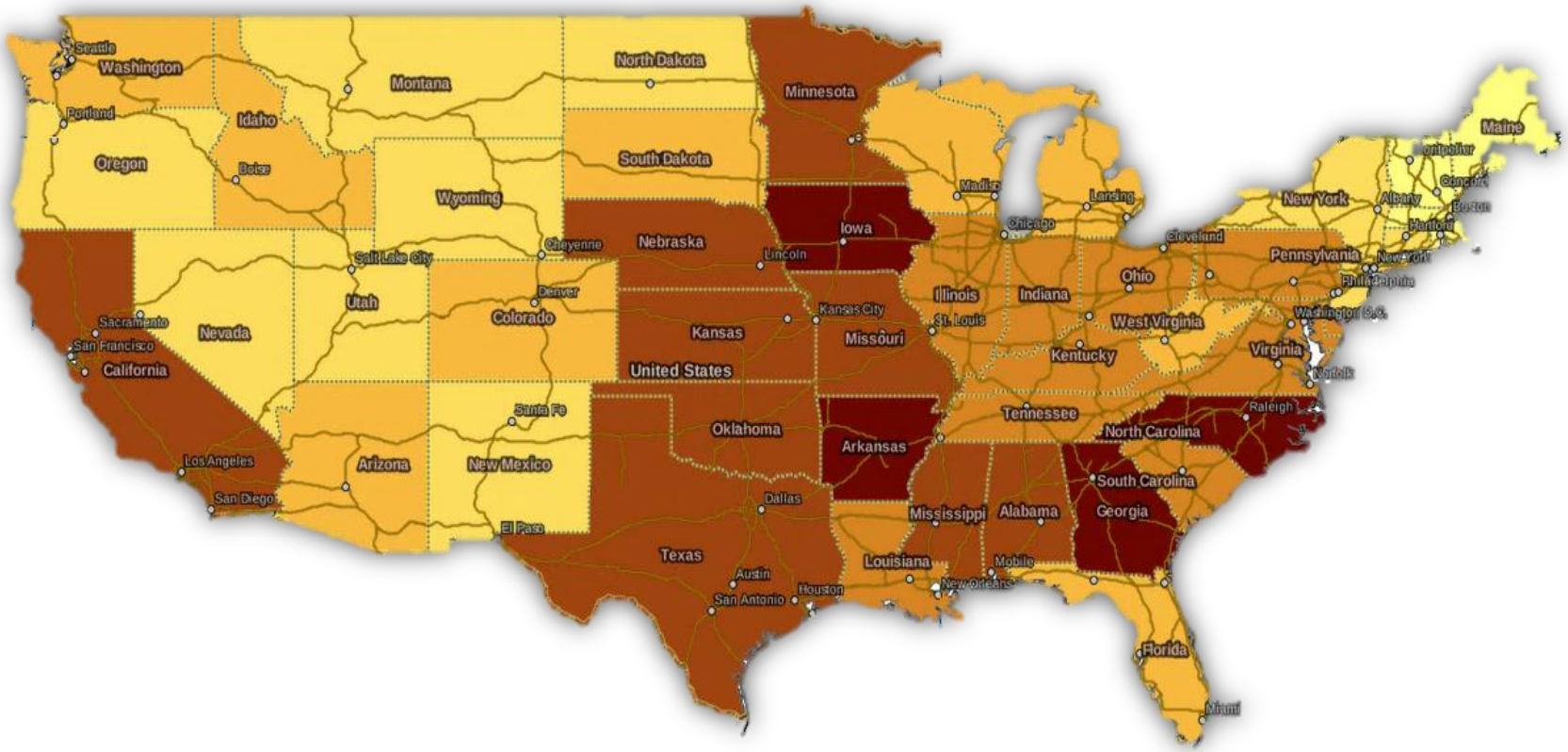
Coming soon…

Legislative Library

- Bioenergy legislation—passed and pending
- Legislators sorted by name, state, committee—see their work
- Committees and subcommittees working on bioenergy



Site Demo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