

Biofuels in the United States

- Government Policies, Current Status, Future Trends

INNOV-AGRI

Village Bioénergies

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Agricultural Attaché

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President Obama's Commitment to Renewable Energy

*“To put people back to work
today, and reduce our
dependence on foreign oil
tomorrow, we will double
renewable energy
production.”*

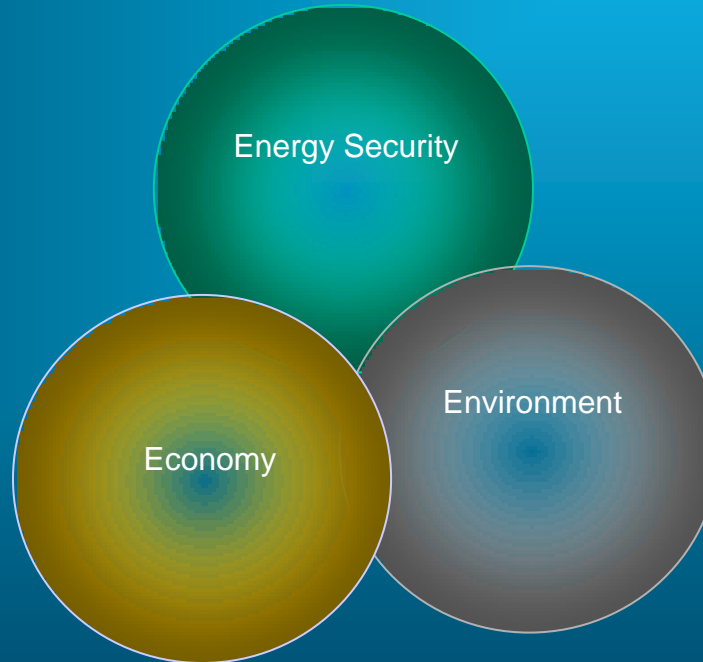


Why Does the U.S. Care About Biofuels?

Energy Diversification: Developing biofuels increases global supply of transport fuels

Economic Development:

Increased farm income, and economic development for rural communities



Environmental Benefits:

Lower GhG emissions from Transportation.

Active Federal Government Departments

Some of the Players are:

The United States Department of Agriculture (USDA)

The Department of Energy (DOE)

The Environmental Protection Agency (EPA)



Key Policy Tools and Program Support:

- *Mandates (EPA)*
- *Crop Assistance (USDA)*
- *Project Loan Guarantees (USDA, DOE)*
- *Tax credits (Treasury)*
- *Research programs (USDA, DOE)*

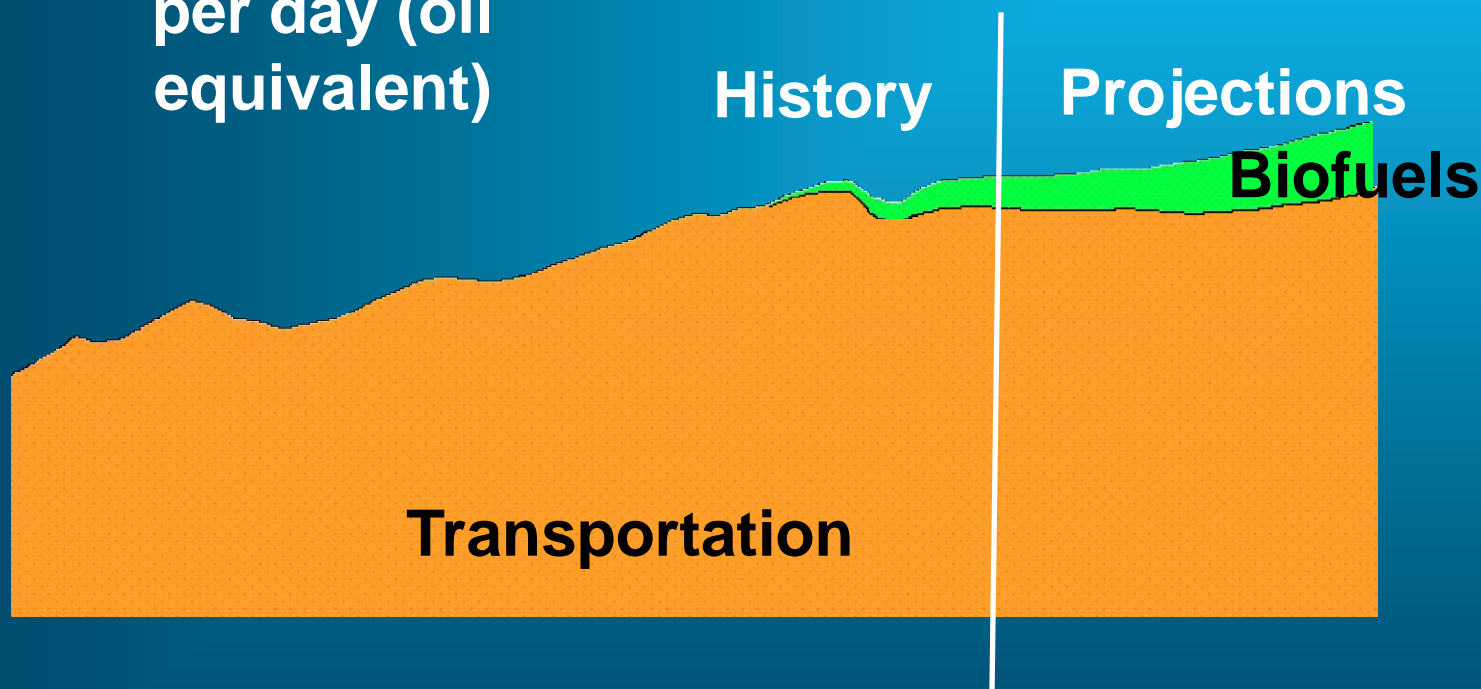




Biofuels Increase Energy Independence

U.S. biofuel use grows as fossil fuel use flattens

million barrels
per day (oil
equivalent)



Source: US Depart. Of Energy – EIA, Annual Energy Outlook 2009 Reference Case

U.S. Programs Support Industry to Meet Mandates...

Programs

Tax Incentives: Help compete with fossil fuels during early years of development.

Loan Guarantees: support the construction of demonstration scale (new technologies) and commercial scale (proven technologies) biorefineries.

Research and development: Grants to Federal, state, private entities and universities working on feedstock development; co-products; sustainability

Repowering Assistance: Improve GHG savings of biorefineries by converting to biomass based electricity.

Feedstock Production: Support farmers delivering advanced feedstock to approved biorefineries.



US Policy & Programs Support Industry to Meet Mandates

2008 Farm Bill Energy Title IX: Programs and Provisions

Mandatory Funding includes \$1.1 billion to leverage renewable energy industry investments in new technologies and feedstocks

Discretionary Funding (\$777 Million) also exists



U.S. Policy and the Renewable Fuel Standards (RFS2)

Overview

- ***Energy Independence and Security Act of 2007***

RFS2 regulatory program went into effect on April 1, 2010.

Lifecycle GHG analysis

- ***Includes Restrictions***

- ***On feedstocks (based on GHG calculation)***
- ***On land feedstocks come from***

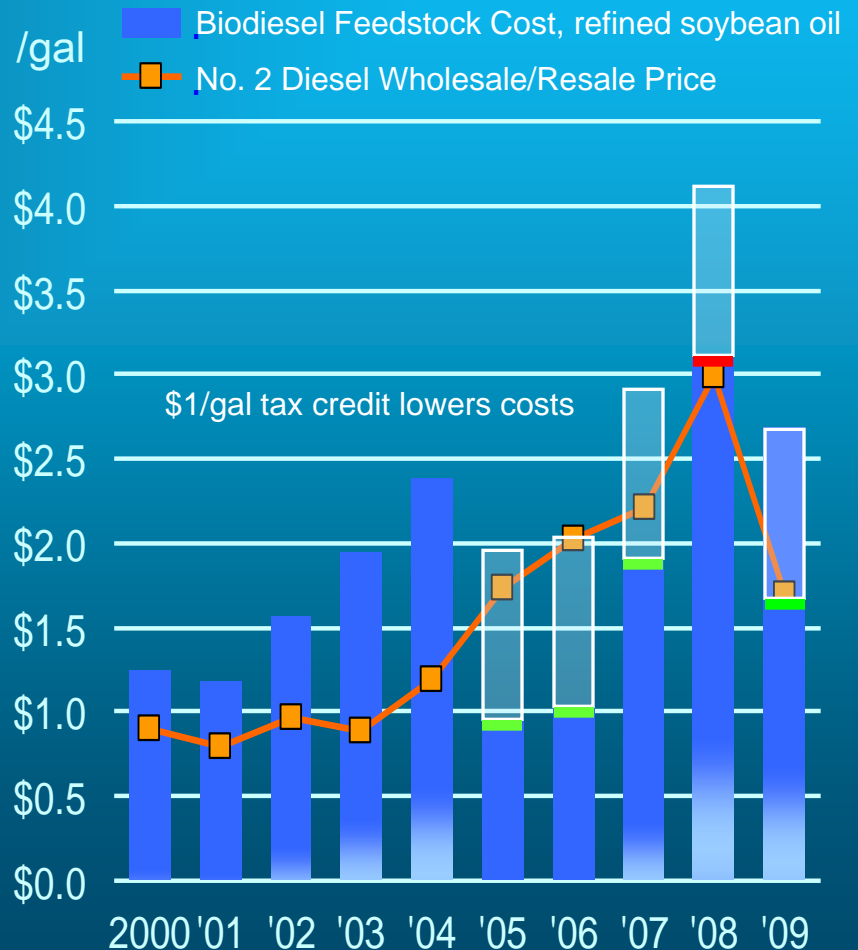
- ***Renewable Identification Number (RIN) Generation***

- ***Mandates Favor Increased Role for Advanced Biofuels***



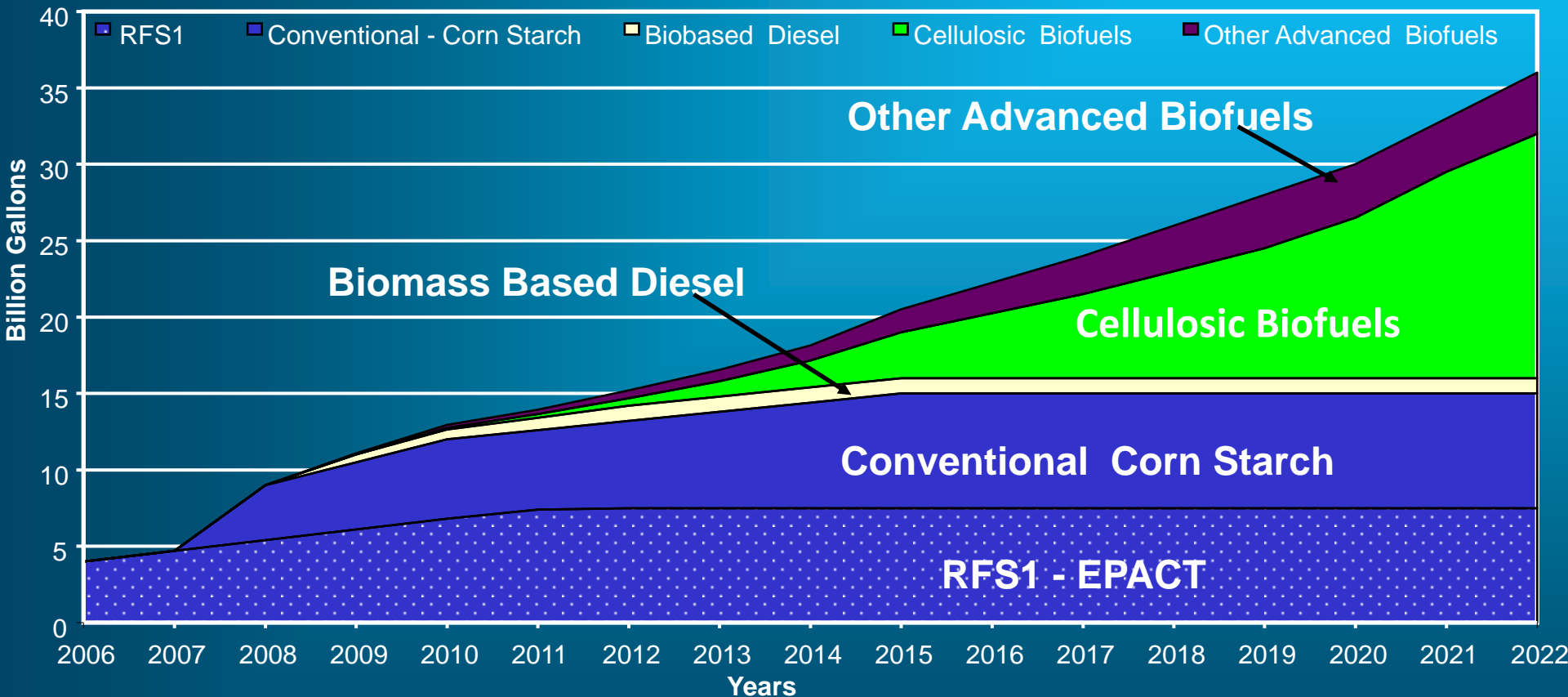
US Policy: Tax Credit Makes Business Profitable...Sometimes

- Feedstock accounts for 80-90% of production costs.
- Biodiesel production costs are typically well above the cost of petroleum diesel.



The Increase Comes from the Advanced Category...

EISA 2007 and Renewable Fuel Standards



New RFS2 Breakouts

Four Categories

Biomass-Based Diesel: 1 Bgal by 2012 and beyond
Must meet a 50% lifecycle GHG threshold

Cellulosic Biofuel: 16 Bgal by 2022
Must meet a 60% lifecycle GHG threshold

Advanced Biofuel: Total of 21 Bgal by 2022 (Minimum of 4 billion additional)
Includes cellulosic biofuels, biomass-based diesel and sugarcane ethanol
Must meet a 50% lifecycle GHG threshold

Renewable Biofuel: Total of 36 Bgal by 2022 (Minimum of 15 Bgal additional)
Ethanol derived from corn starch – or any other qualifying renewable fuel
Must meet 20% lifecycle GHG threshold

Grandfathering Clause - existing biofuel facilities are not required to meet GHG threshold for conventional biofuel category

GHG = greenhouse gas

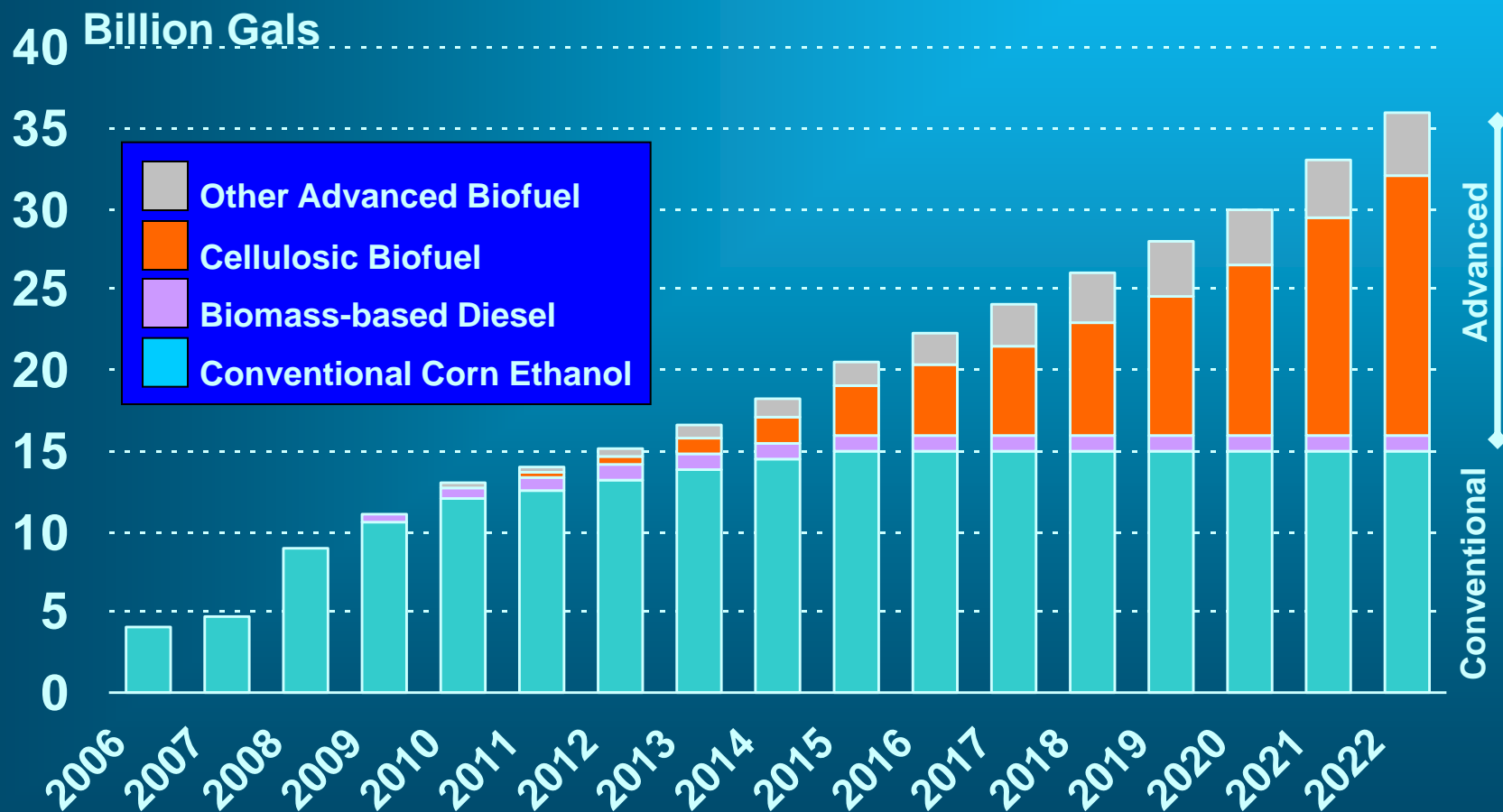




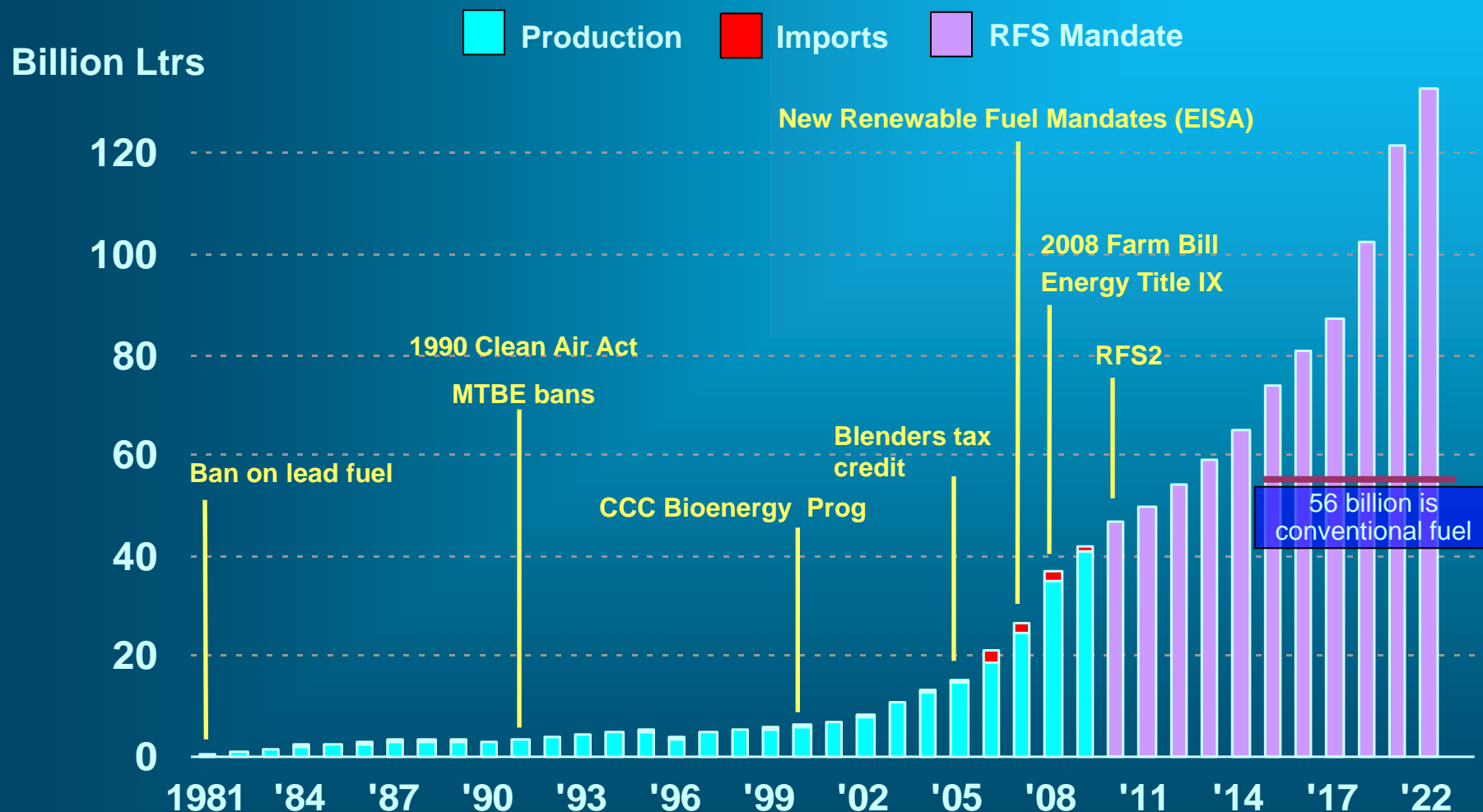
Energy Independence & Security Act 2007

Renewable Fuel Standard (RFS)

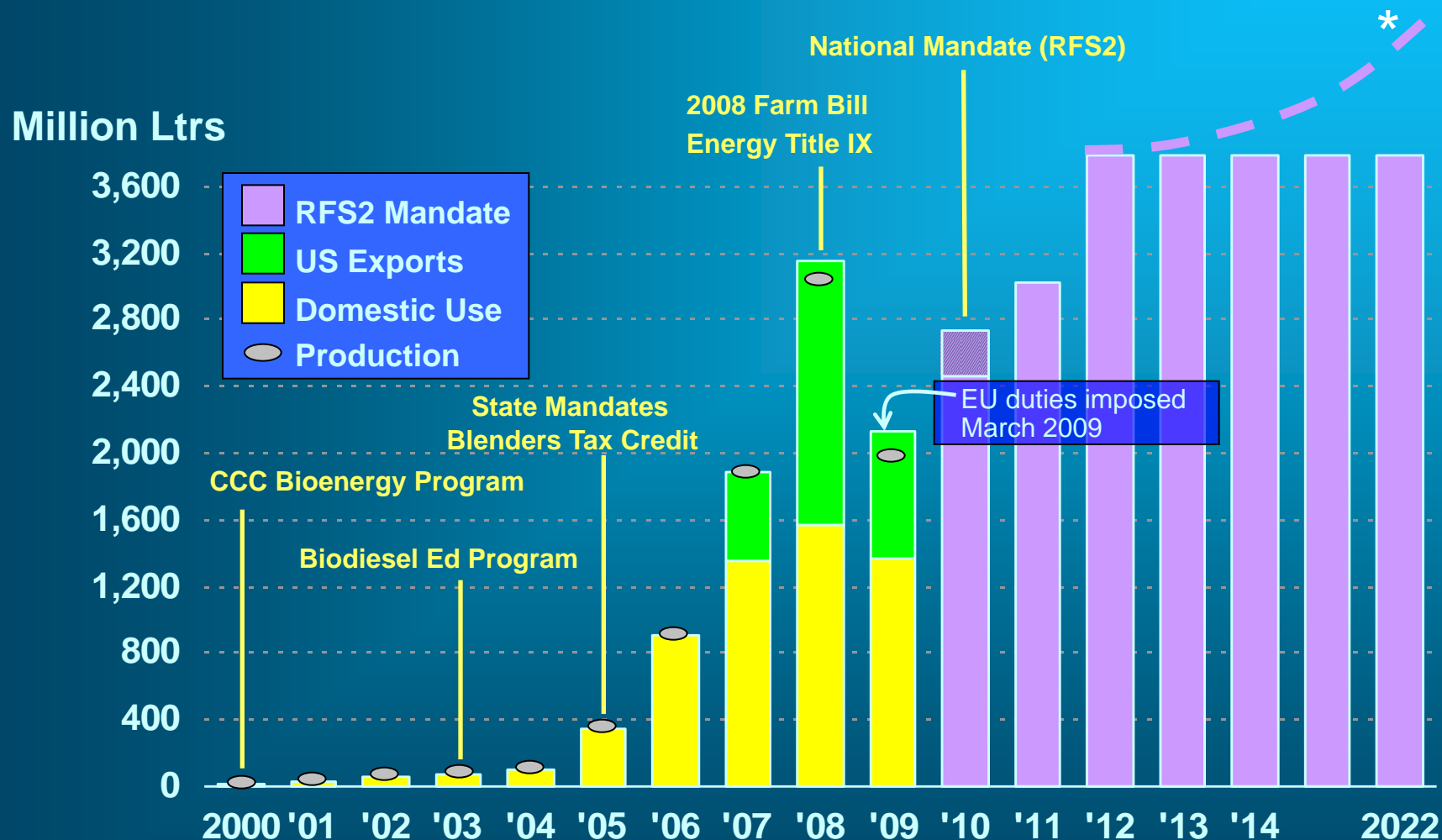
Renewable fuel volumes under RFS2 increase to 36 Bgals by 2022.
No mandated increases for corn starch ethanol after 2015.



US Ethanol Industry Policy & Program Support



US Biodiesel Industry Policy & Program Support



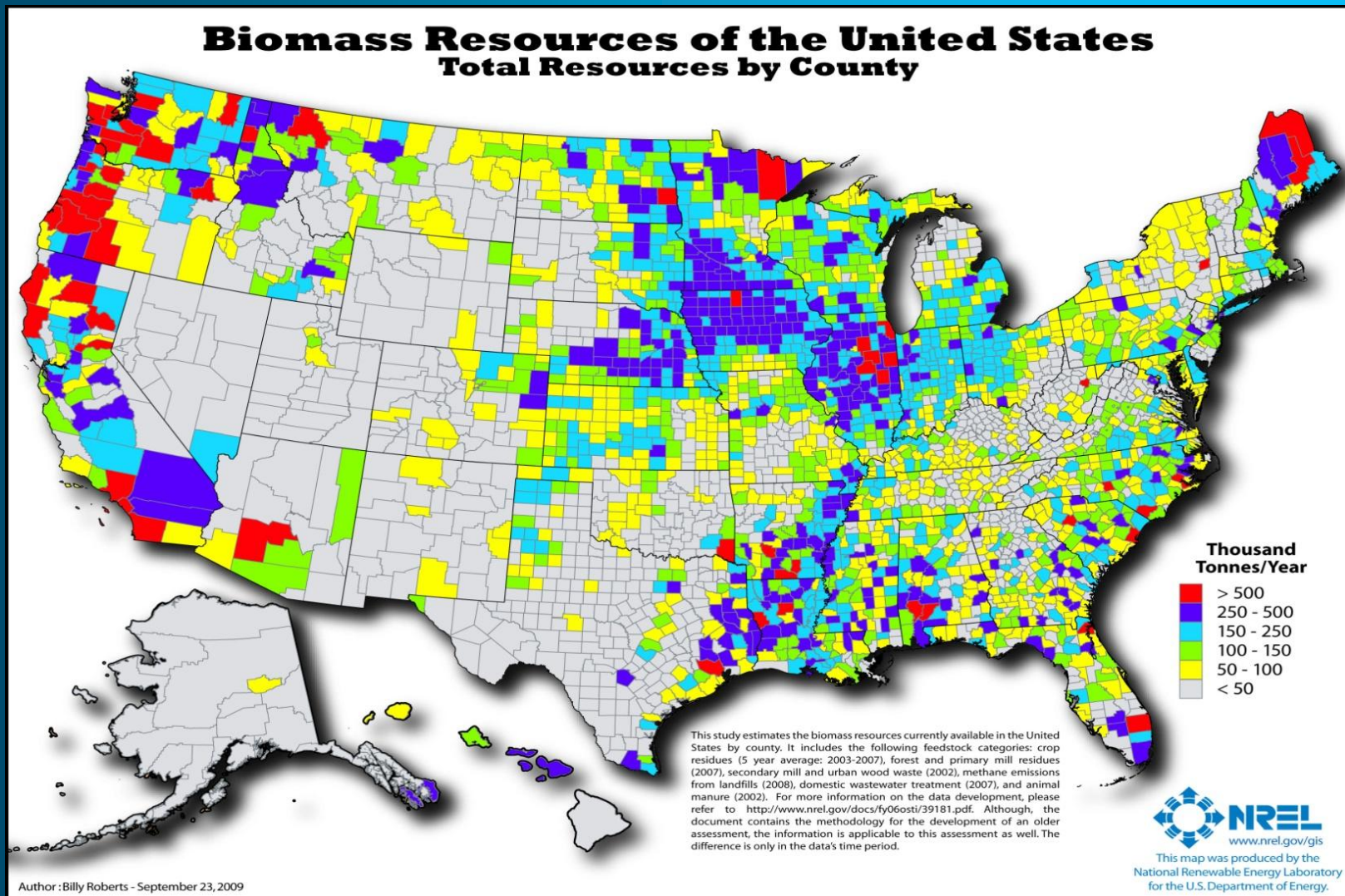
* In addition to the 1 BGal mandate for biomass-based diesel, biodiesel can fulfill part of the mandate for other advanced biofuel. How much depends on the use of other fuels like cellulosic ethanol or sugarcane ethanol.

Plans to meet Advanced Biofuel Mandates....

- **Technology Improvements (Conversion efficiencies)**
- **Streamlined implementation strategies**
- **Economic Viability (Use of co-products)**
- **Supply Chain Development (minimize transaction costs)**
- **Address Sustainability Issues Up-front**



Production is Most Feasible in Areas with High Renewable Biomass Resources...

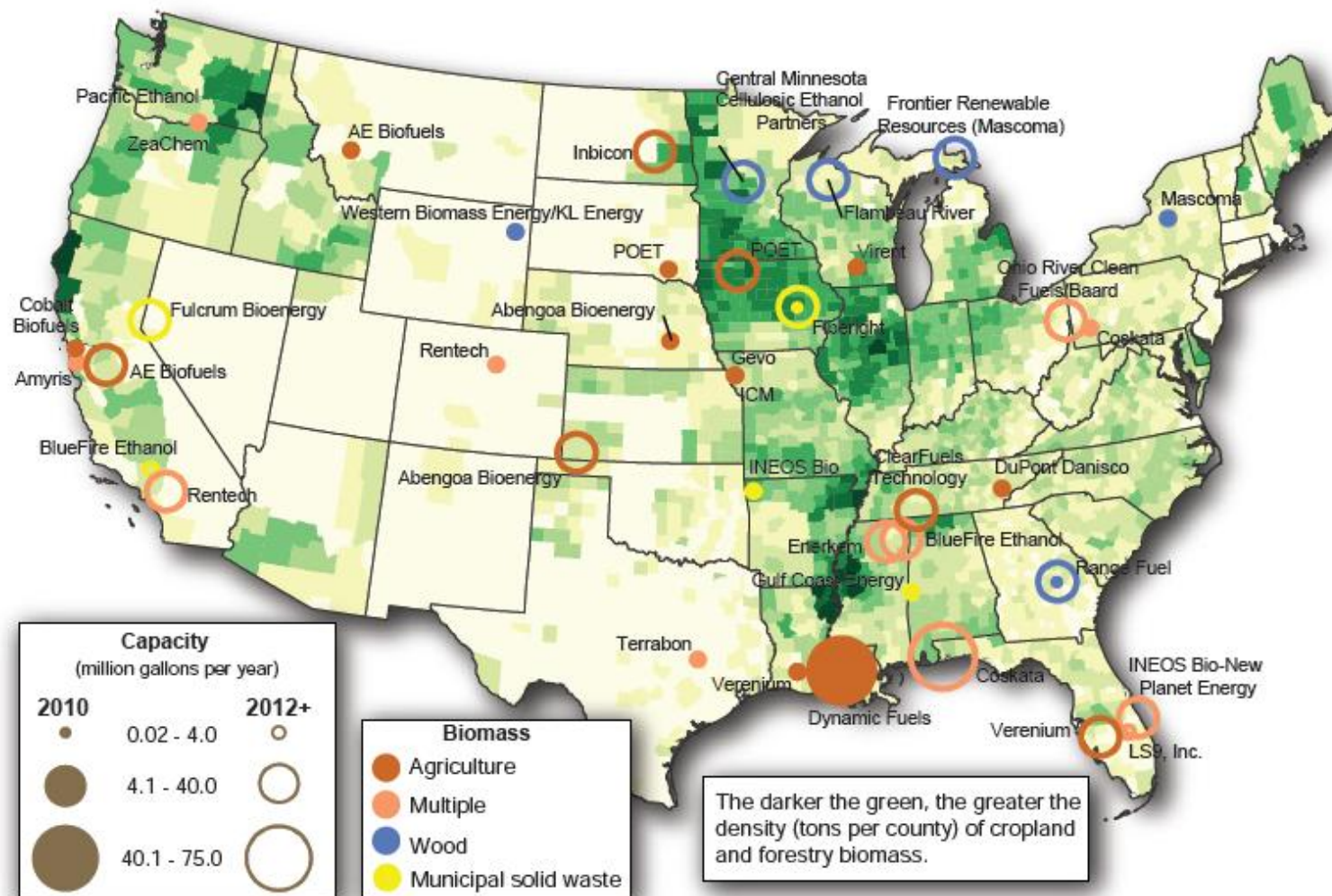


Next-Generation Biofuel Production

More than 50% of Next Generation Plants are currently located in the USA
(30 plants in U.S. / 54 plants globally)

Figure 4

Next-generation biofuel plants located across the Nation near biomass supplies



Source: USDA, Economic Research Service (table 1, pp. 4-5); biomass resource map from Oak Ridge National Laboratory (Biomass Research and Development Initiative, December 2008, p. 79).

In Summary...

- *Biofuels reduce our GHG emissions, lower our dependence on foreign oil, and improve our rural economy*
- *Broad government and policy support is vital to the development of the biofuels industry*
- *US Biofuels will continue to expand to meet mandates*
- *Government partnership with industry is crucial for success*

