



# Biodiesel Update

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## Today's Presentation

- General NBB Update – Important Stuff to Know (report from Camp Biodiesel 2009)
  - ASTM
  - Warranties
- Energy Balance
- State Mandates
- Indirect Land Use
- RFS 2
- RINS







## ASTM Current Status

- ASTM D6751 is the approved standard for B100 for blending up to B20
  - Feedstock and Process Neutral
  - ASTM has approved D6751 for B100 based on a B20 final blend
  - Higher blends upon consultation with the OEM
- **D975 (on/off road diesel) and D396 (heating oil) both allow up to 5% biodiesel**
  - 5.49% and lower with rounding
  - Performance based for engines
  - B100 must meet D6751 prior to blending
- **D7467: B6 to B20 for on/off road diesel engines**
  - Designed so that if B100 meets D6751 and petrodiesel meets D975, B6 to B20 blends will meet their specifications:

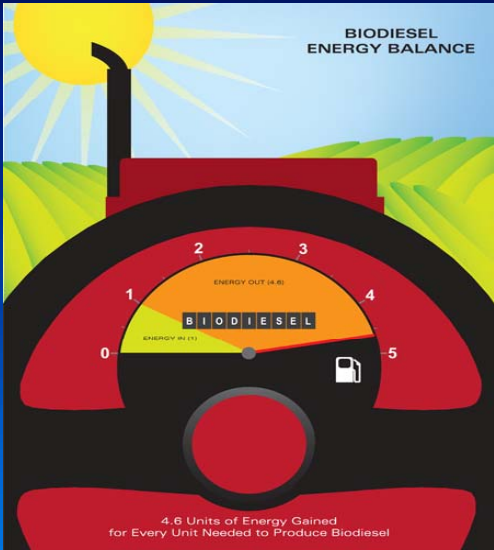


## OEM Biodiesel Blend Approvals

- Approve B20 or higher on at least some models:
    - Arctic Cat, Buhler, Case Construction Equip., Case IH, Caterpillar, Cummins, Chrysler (Dodge Ram & Sprinter - Fleets Only), General Motors (SEO for fleets only), Hayes Diversified Technologies, John Deere, Navistar, Perkins, Toro
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- Approve B100:
    - Case IH (approx. 50% of models), Fairbanks Morse, New Holland, Tomcar

**BIO DIESEL** Biodiesel Energy Balance

- 3.2 to 1 in 1998
- Grew to 4.56 due to improved farming
- Predicted to reach 5.44 by 2015



**BIO DIESEL** State Mandated & Incentivized Markets

- Statewide Requirements (greater than 5 million gallons/year)
  - **In Effect:**
    - Minnesota B5 requirement – 40 million gallons.
    - Washington B2 requirement – 16 million gallons.
  - Next to Implement:
    - Oregon B2 requirement – 12 million gallons. September, 2009.
    - Pennsylvania B2 requirement – 32 million gallons. January 1, 2010.
    - Massachusetts B2 requirement – 22 million gallons. July 1, 2010.
- Consumption Incentives
  - Illinois B11 sales tax exemption – 50 million gallons.
  - Iowa retailer tax credit – 10 million gallons.
  - New York State tax credit (plus fleet requirement) – 16 million gallons.

**Total required/incentized volume: ~200 million gallons.**

## 2009+: The Big Picture

### Two big impactors:

- The rise of climate change policy and state budget problems.
- The change to carbon-based policy has been...
  - GOOD in that states with large diesel markets are moving forward with low carbon fuel standards, which may benefit biodiesel.
  - BAD in that many states are re-thinking the assumption that biodiesel is good for the environment.
  - Result: introduction of biodiesel-specific policies has slowed and biodiesel's role in LCFS policies is in question.
- 603 biodiesel bills introduced in 2008; only 246 this year.

Why? States are broke.



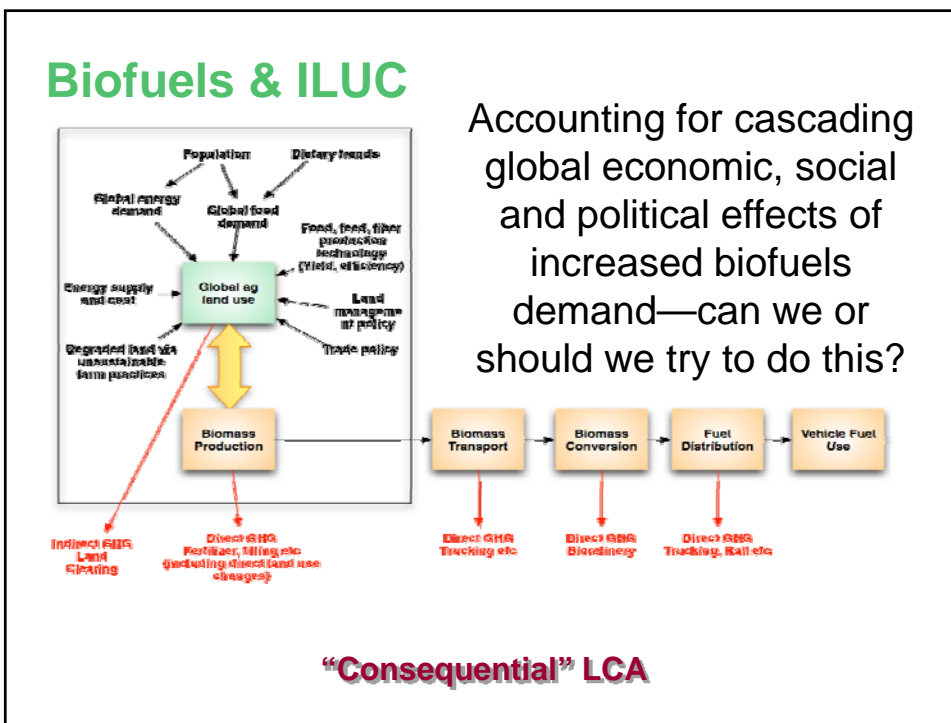
## 2009: The Major Initiatives


- California LCFS - 4 billion gallon diesel market
- Northeast States LCFS - 9.2 billion gallon diesel market
- Iowa B5 Standard – 850 million gallon diesel market
- Massachusetts B2-B5 mandate - 1.1 billion gallon on-road diesel/heating oil market
- New York City B20 mandate - 900 million gallon heating oil market
- Oregon LCFS - 700 million gallon diesel market

**BIO DIESEL** EPA Proposed Rule – RFS2

- Requires 500 million gal. biodiesel in 2009
  - less than 2008 production
- Requires biodiesel must reduce GHG emissions by 50%
  - Compared to 2005 diesel production
  - Does not account for increased CO<sub>2</sub> from tar sand utilization
- Requires feedstock from land cleared prior to 2008
  - Cannot cause clearing of new lands.


Concludes that biodiesel from all feedstocks has direct GHG emissions reduction of 80%; However, when estimated indirect emissions from ILUC, vegetable oils net benefits are only 22%



 **What does the Law Say?**

Section 201 of EISA (42 U.S.C. 211(o)(1)(H)) defines lifecycle greenhouse gas emissions as follows:  
 (H) **LIFECYCLE GREENHOUSE GAS EMISSIONS.** The term "**lifecycle** greenhouse gas emissions" means the aggregate quantity of gas emissions (including direct emissions and significant **indirect** emissions such as significant emissions from land use change), as determined by the Administrator, related to the full fuel **lifecycle**, including all stages of fuel and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished fuel to the ultimate consumer, where the mass values for all greenhouse gases are adjusted to account for their relative global warming potential.

The law correctly describes the fuel lifecycle (large red oval above). However, ILUC occurs outside the fuel life cycle...


 **ILUC emissions according to EPA**

- Biofuel **MAY** increase commodity price
- Price increase **MAY** stimulate increase in crop acres in Brazil
- Crop acres **MAY** displace livestock
- Livestock **MAY** move into forested areas
- Forests **MAY** be burned to clear for pasture
- **(MAY)<sup>5</sup> at least**

***EPA assumes worst case scenario at every juncture.***

**BIO DIESEL** Soy Fixes Nitrogen

- Failed to follow IPCC protocol for calculating emission from nitrogen fixing plants.
- EPA faulted soy for N<sub>2</sub>O emissions
- When they should credit soy for fixing nitrogen in the soil.



**BIO DIESEL** Credit for Co-products

- FASOM does not deal with the non agricultural co-products like glycerine.
- There is no mention of glycerine in the DRIA and the supporting documentation for FASOM states:
  - No co-products are associated with biodiesel production in FASOM.
- While FASOM does not consider glycerine GREET does.
- Glycerine co-product value from GREET is 16,957 g CO<sub>2</sub>/mm BTU of biodiesel. This is 17.5% of the emissions of the petroleum baseline.



## Stated Scope of RFS-2 Rulemaking


“This action proposes regulations designed to ensure that refiners, blenders, and importers of gasoline and diesel would use enough renewable fuel each year so that the four volume requirements of the Energy Independence and Security Act would be met with renewable fuels that also meet the required lifecycle greenhouse gas emissions performance standards.”

74 Fed. Reg. at 24,904.




## RINS Background Information

- One of the key requirements, Renewable Identification Number (RINS) is central to RFS program administration.
- RINS is the basic currency for the RFS program for credits, trading and use by obligated parties to track the volumes of renewable fuels.
- Environmental Protection Agency responsible for implementation of RFS and ensuring compliance requirements are met.




## RINS Overview Continued

- A RIN is a 38 character numeric code that is generated by the producer or importer of renewable fuel representing gallons of renewable fuel produced/imported and assigned to batches of renewable fuel that are transferred upon change of ownership to others.
- Biodiesel producers are required to transfer all RINS attached to a batch of biodiesel along with the fuel.
- Assigned RINS are transferred when ownership of a batch of fuel occurs.
- RINS are not transferred if the fuel only changes custody.

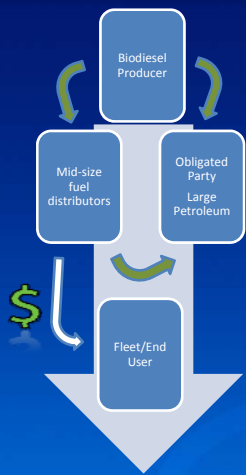


## RINS Background Information

- RINS remains with the biodiesel until it is blended into a finished product by the renewable blender. Biodiesel must be blended at 80% or less into diesel fuel before RINS can be separated.
- An obligated party that purchases biodiesel must separate the RINS from the biodiesel when they take ownership.
  - Obligated party may keep or sell the RIN.
  - Obligated party may either blend or resell the biodiesel without the RIN.
  - When biodiesel with RIN is blended into finished product by non-obligated parties, the RINS can be separated from the biodiesel and then becomes a tradable commodity.




## RINs value hierarchy



Every gallon of biodiesel creates 1.5 RIN.

Obligated party required to collect X number of RINs per year/quarter. When obligated parties have to purchase RIN on open market, your fuel supplier has opportunity to sell their RINs and profit.

RIN value to fleets: awareness allows you to better negotiate bids and fuel prices



## Biodiesel RINS Economics (example)

▪ RINS price 07/21/2009	= \$.17---\$.18
▪ 1 biodiesel gallon	= 1.5 RINS
▪ Current value	= \$.255 to \$.27/gallon
▪ Chicago Rack #2 ULSD	\$1.72
▪ B99.9 REG Iowa/Illinois Plant	\$1.80
▪ RINS	<u>\$0.26</u>
▪ Total	\$1.54
▪ Gross Margin Opportunity plus State Incentives (IL, IA, TX, SC)	\$0.18