

**Comments on ARB's  
“Indirect Land Use Technical  
Considerations”**

RFA

January 30, 2009

# Preliminary Comments

- These are our preliminary comments, we will submit detailed written comments shortly

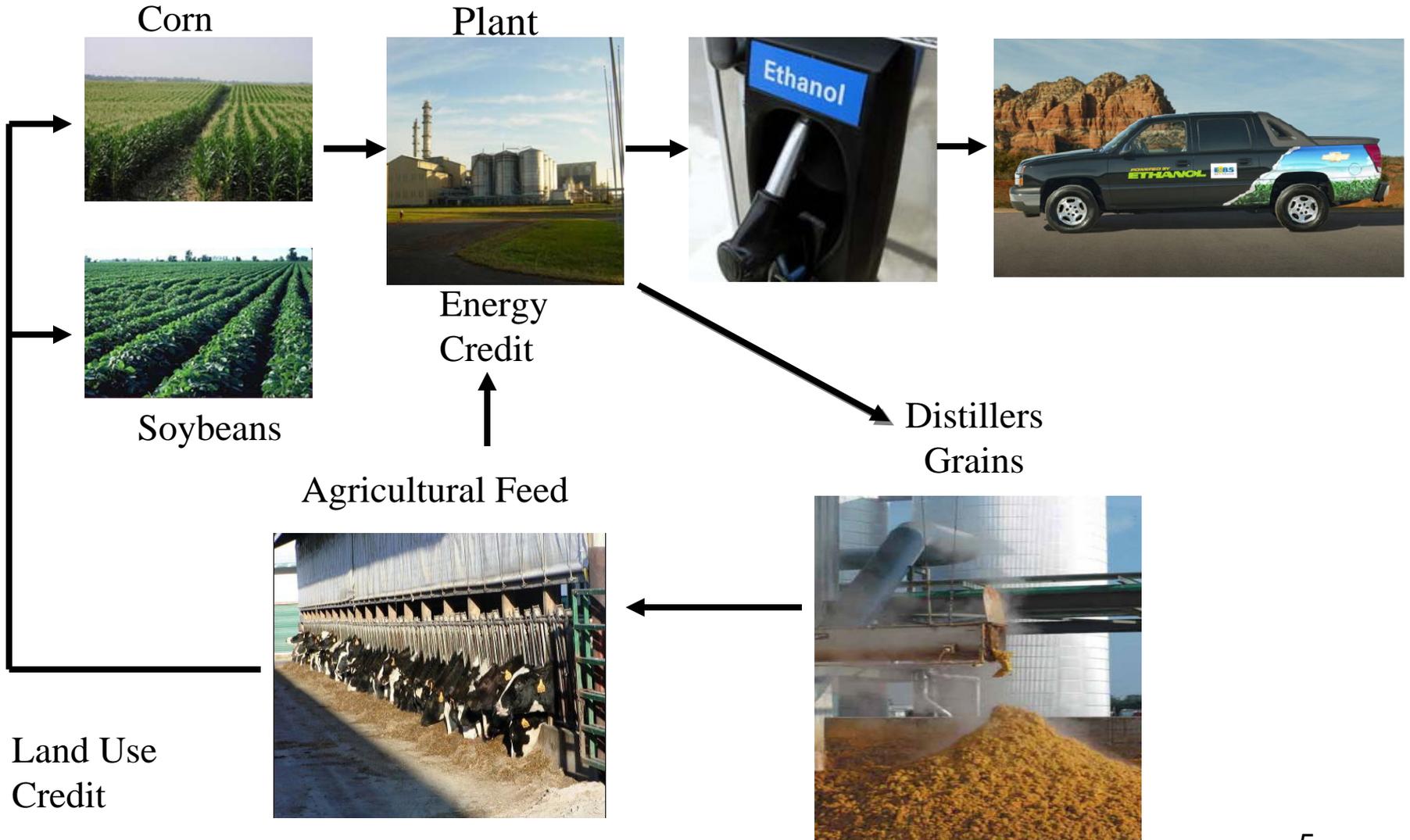
# Adjustment for Yield Improvements

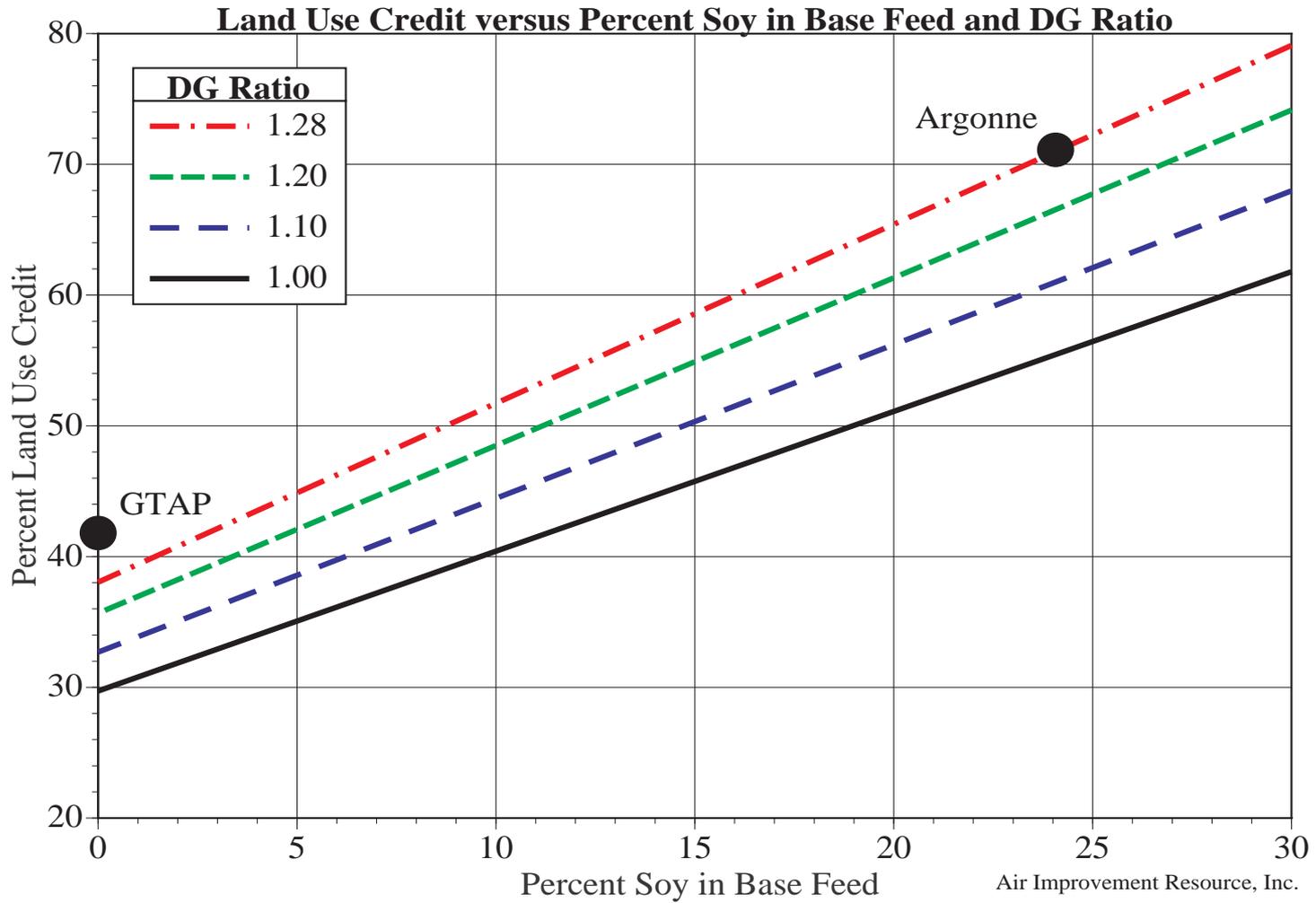
- Ethanol is being shocked from 2001 to 2015 (13.25 bgy), but yield improvements only evaluated from 2001 to 2007-08 (8.7%). This is inconsistent.
- USDA projects yield improvements of 23% from 2001 to 2015.
- ARB is only applying yield improvement to **newly converted land**. What about the yield improvement on all the other hectares, for example, the 31 mha of land in corn in 2015?
  - Assumption of balanced demand increase and yield improvements?
  - What if this is not the case? Any data? Sensitivity analysis?

# DG Land Use Credit

- Purdue's data used for GTAP confirms Argonne report of greater than 1 lb of meal being replaced by 1 lb of DGs (DG ratio)
- Argonne study indicates DGs replace corn and soy, not just corn - quite a detailed study based on survey data
- ARB should carefully evaluate Argonne study (if not already done)
  - Provide clear explanation of what assumptions or estimates ARB disagrees with and why

# Distillers Grains Land Use Credit





# DG CoProduct Credit for Corn Ethanol

- It's the coproducts that makes sugarcane ethanol impact relatively low
  - Electricity: easy to measure output
- Same is true for corn ethanol
  - A little harder to estimate than electricity - 3 or 4 types of animals, but still can be done

# Grassland Emissions

- We have concluded that use of Woods Hole is best there is for now

# Conversion of Forest

- A lot of evidence that carbon is stored in building products, whether in the building or in landfills
  - Actually, a lot of evidence that paper is stored for a long time in landfills as well, and some of this is recycled also
- 50% of above ground carbon goes to paper and building products (1/2 and 1/2)
- Purdue is now assuming 25% of above ground mass is stored in building products (conversion of above ground mass)

## **New Issue - Reduced Enteric Fermentation**

- Cattle fed DGs have shorter time to market, and reduced enteric fermentation
- Detailed evaluation in Argonne DG report
- Amounts to 3 g CO<sub>2</sub>/MJ ethanol

# Summary of Effects (approx)

g CO<sub>2</sub> eq/MJ

Item	Cumulative Impact
Start: ARB Corn LUC Estimate (30 yr annualized)	30
Consistent Years Yield Effect in Excess of ARB Effect (-5)	25
Argonne DG LU Credit in Excess of Current GTAP LU Credit (-13)	12
25% Carbon Storage in Bldg Products Forest Effect (-3)	9
Reduced enteric fermentation (-3)	<b>6</b>

## These Adjustments Are Reasonable

- **Yield:** Consistency. Also, yield improvements on all other land available to satisfy demand increases
- **DG Credit:** Tell us what is wrong with the Argonne analysis (or our interpretation), we think it is done correctly
- **Carbon storage in building products:** Only assuming 25% is stored in buildings or landfills, probably higher than this
- **Reduced enteric fermentation:** Cattle produce a lot of GHGs. Any small reduction here can be significant

# How Big is the LUC Effect for Corn Ethanol?

- Not big
- Plants on average getting more efficient as well (recent Cassman, et al UNL report)
- Corn ethanol can be an important component of the portfolio needed to achieve the LCFS

**Thank you**