



# Overview of US BioEnergy Market

## WVDA BioEnergy Forum

### April 4, 2006



**Chemical and Environmental  
Technologies**



**Health and Life Sciences**



**Advanced Engineering  
Systems**

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# BioEnergy Will Be Part of Future

**Biopower is well-positioned to take advantage of growing environmental and clean energy concerns**



Climate Control



Urban Air Quality



Energy Diversity



Jobs in Rural Areas



Forest Management



Solid Waste Management

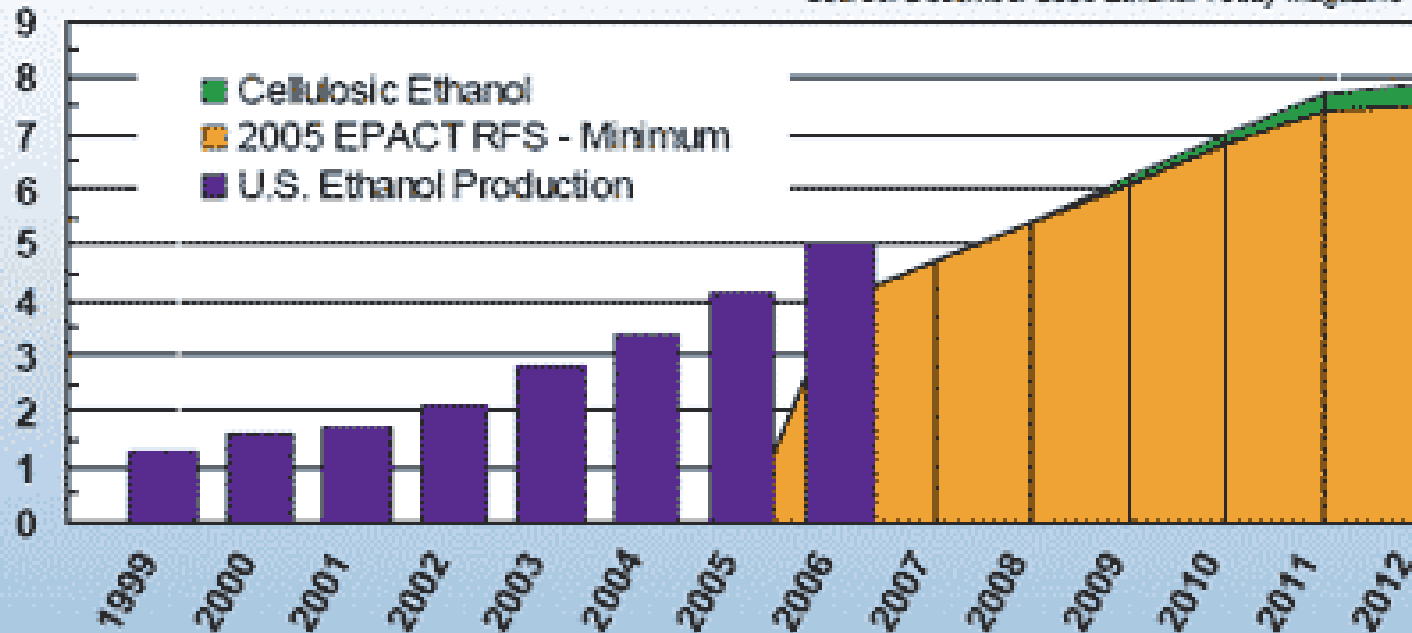
# Overview of Bioenergy

- **Transportation Fuels**
  - **Corn-based Ethanol (including other low lignin sugar producers)**
  - **Cellulosic Ethanol**
  - **Biodiesel**
- **Biomass Gasification**
  - **Syngas**
  - **Bio-Oils**
  - **Hydrogen**

# Future of Ethanol

Actual and Projected U.S. Ethanol Production 1999-2012  
Billion Gallons of Production

Source: December 2005 *Ethanol Today Magazine*



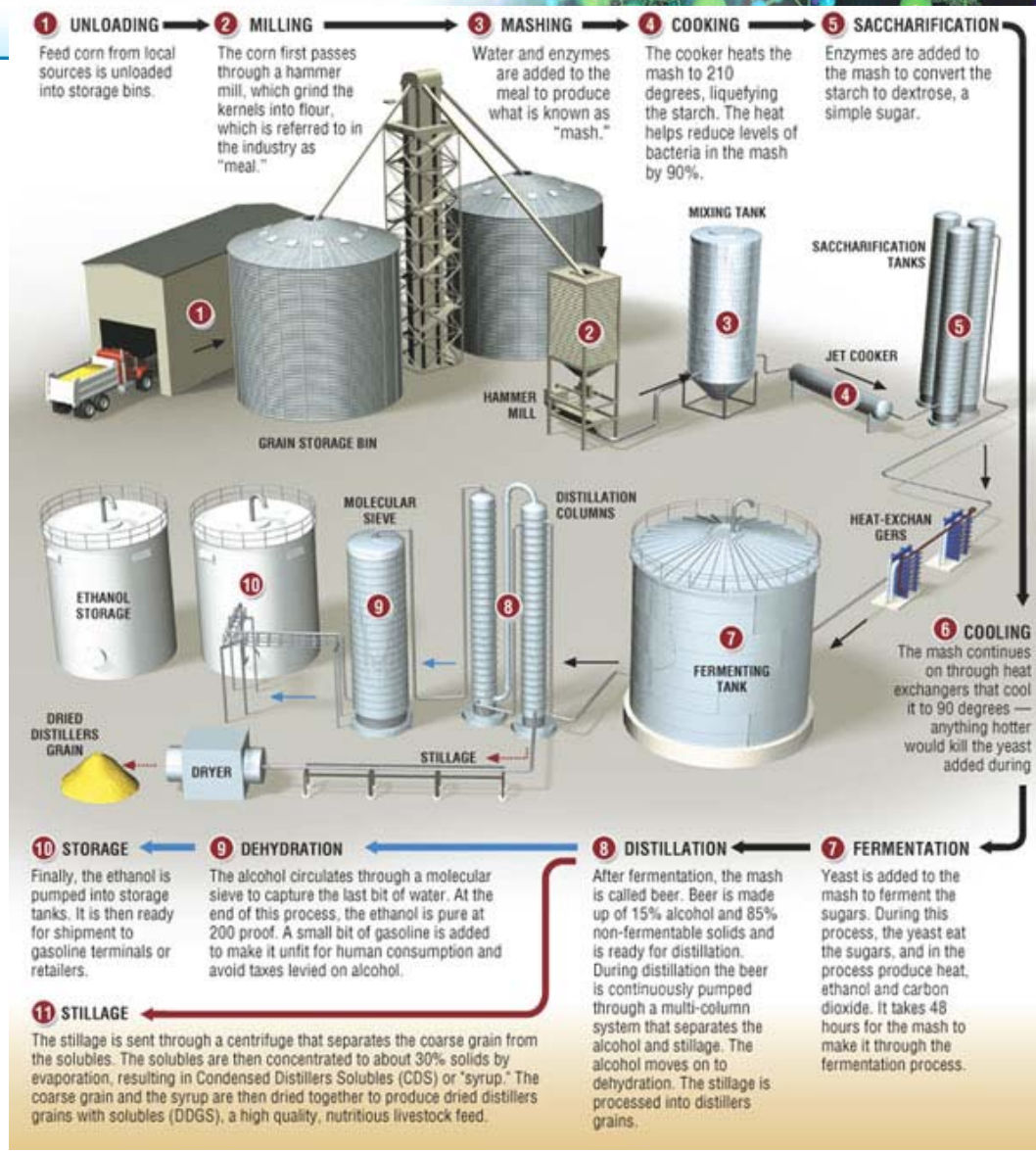
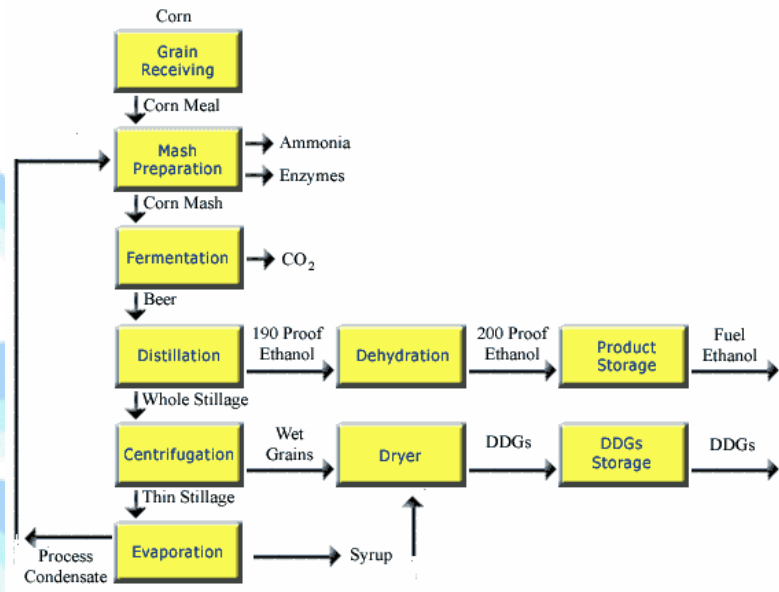
- Renewable Fuels Standard mandates 7.5 billion gallons by 2012
- Total US gasoline market ~140 billion annual gallons

HTL National Renewable Energy Laboratory

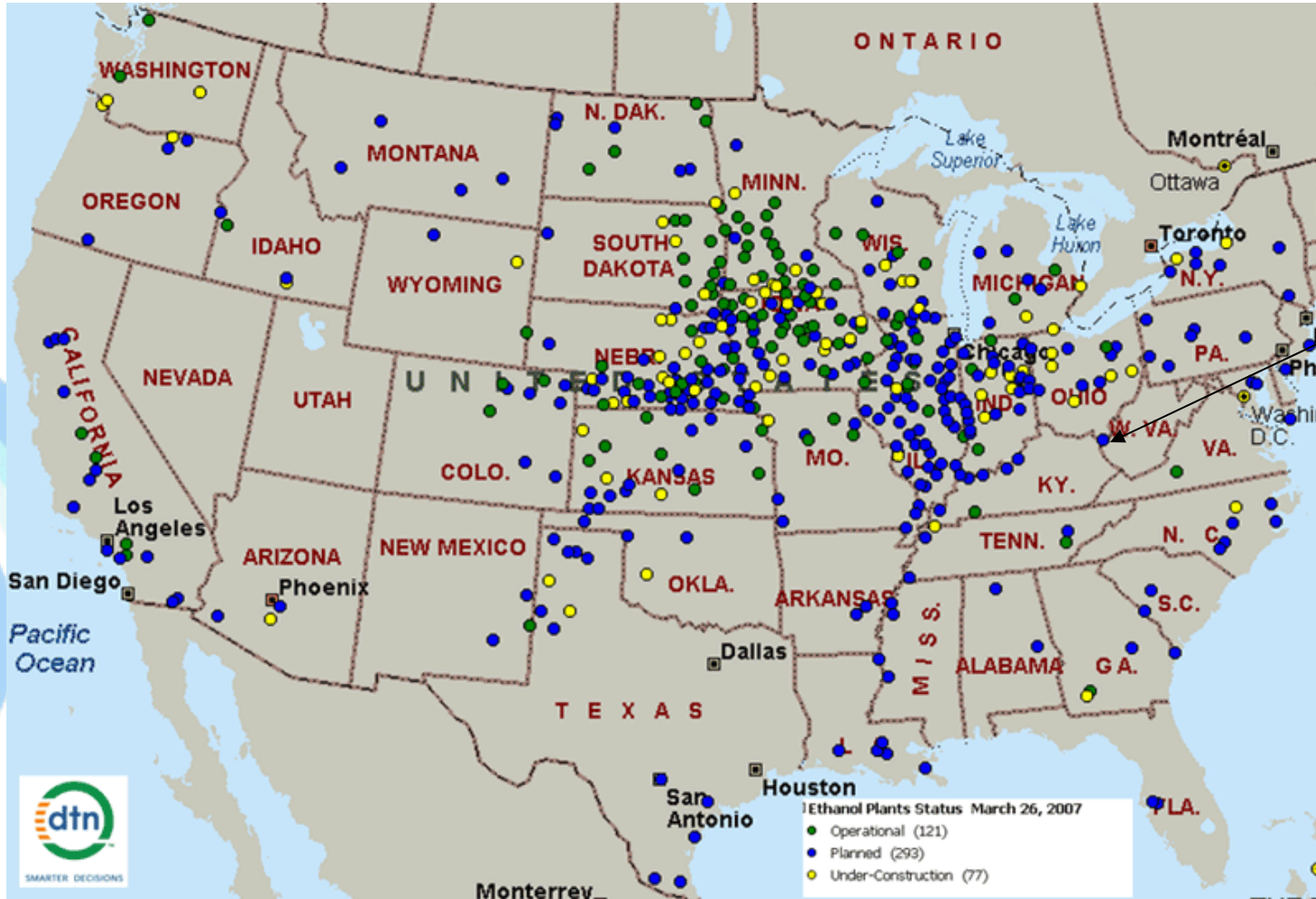
# Ethanol Facility



# Corn Ethanol Process



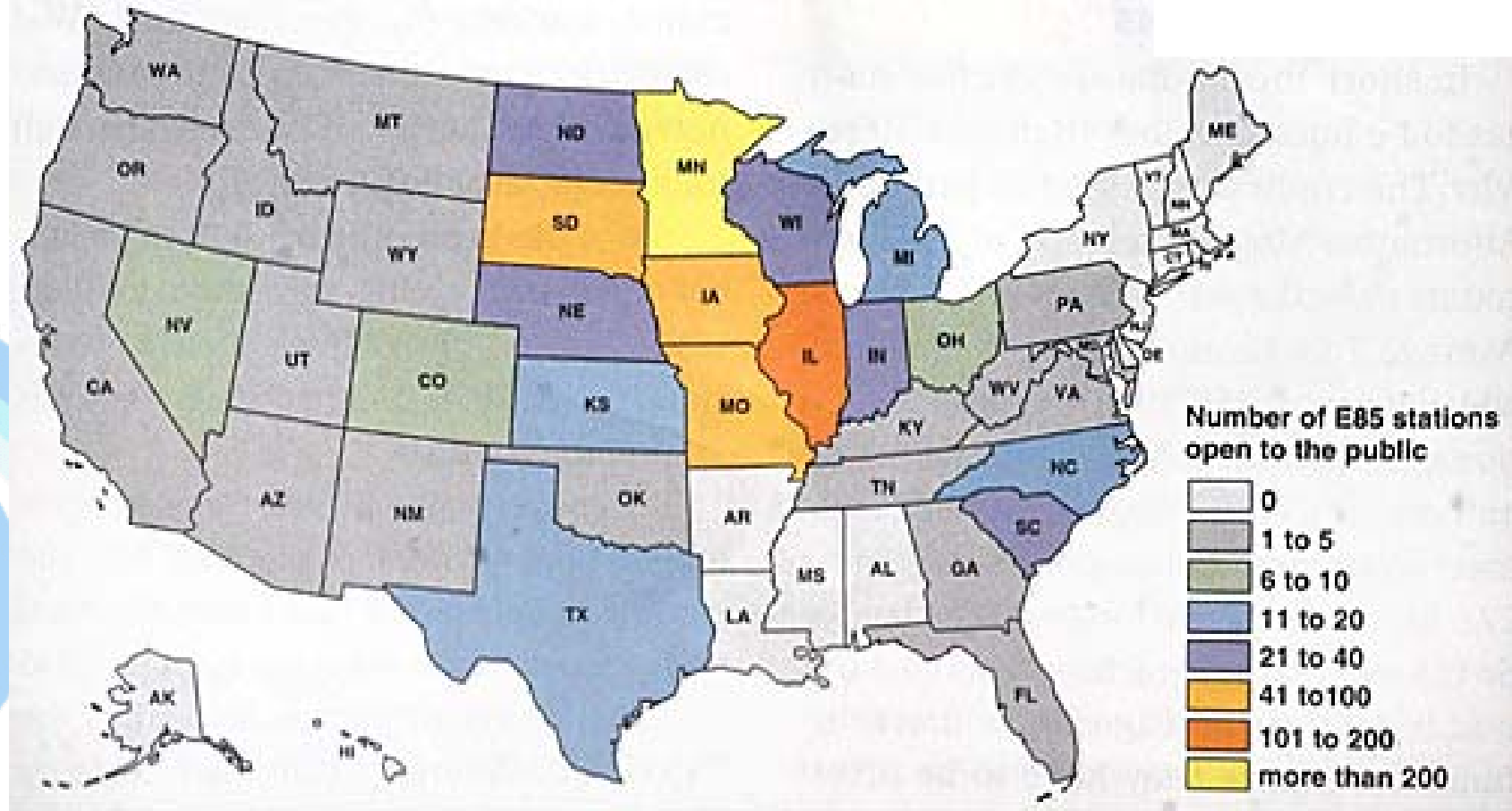
# US Ethanol Plants



South Point Ohio

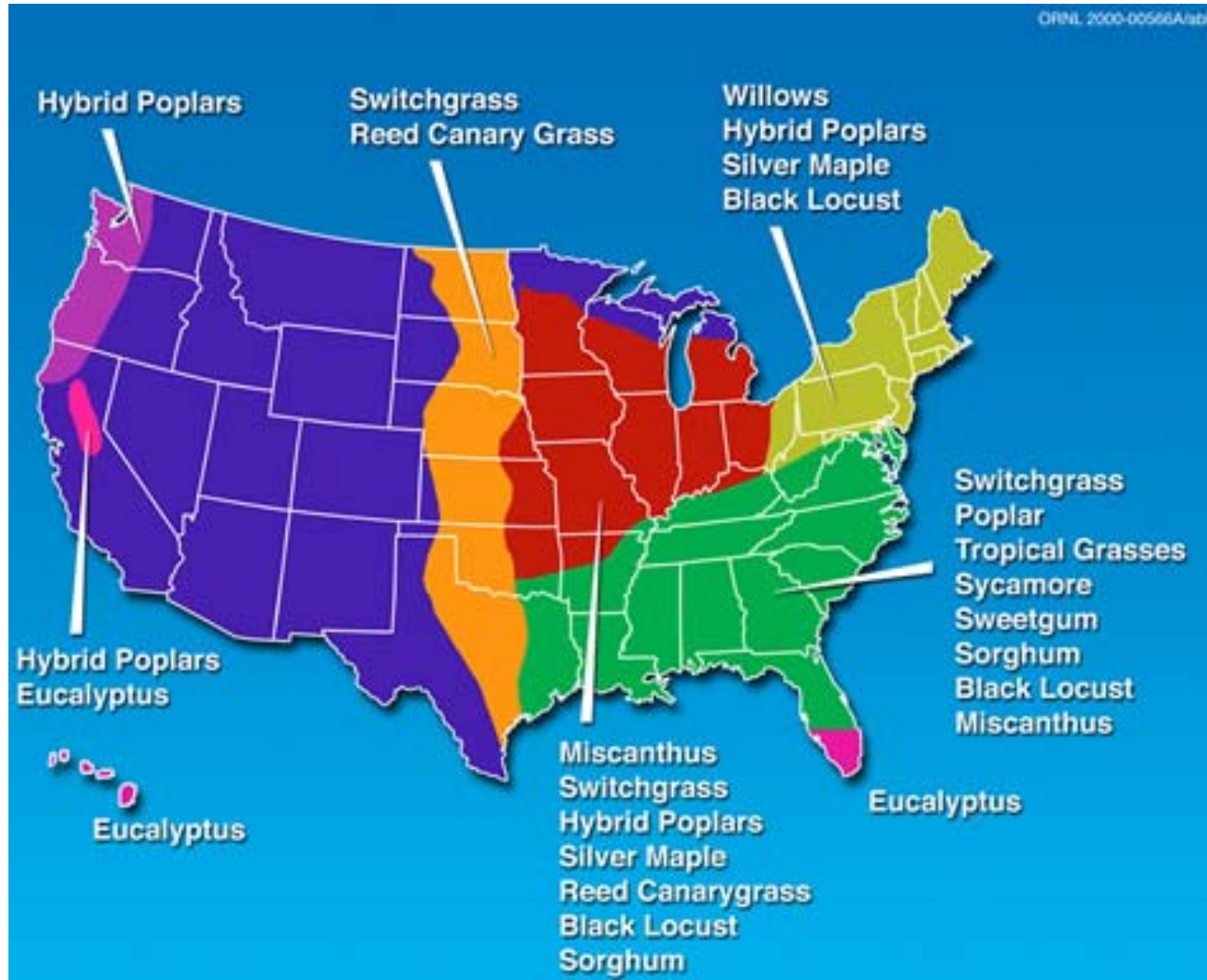
\*Alaska has one ethanol plant in the planning stage  
 \*Hawaii has two ethanol plants in the planning stage

# Ethanol Fueling Stations

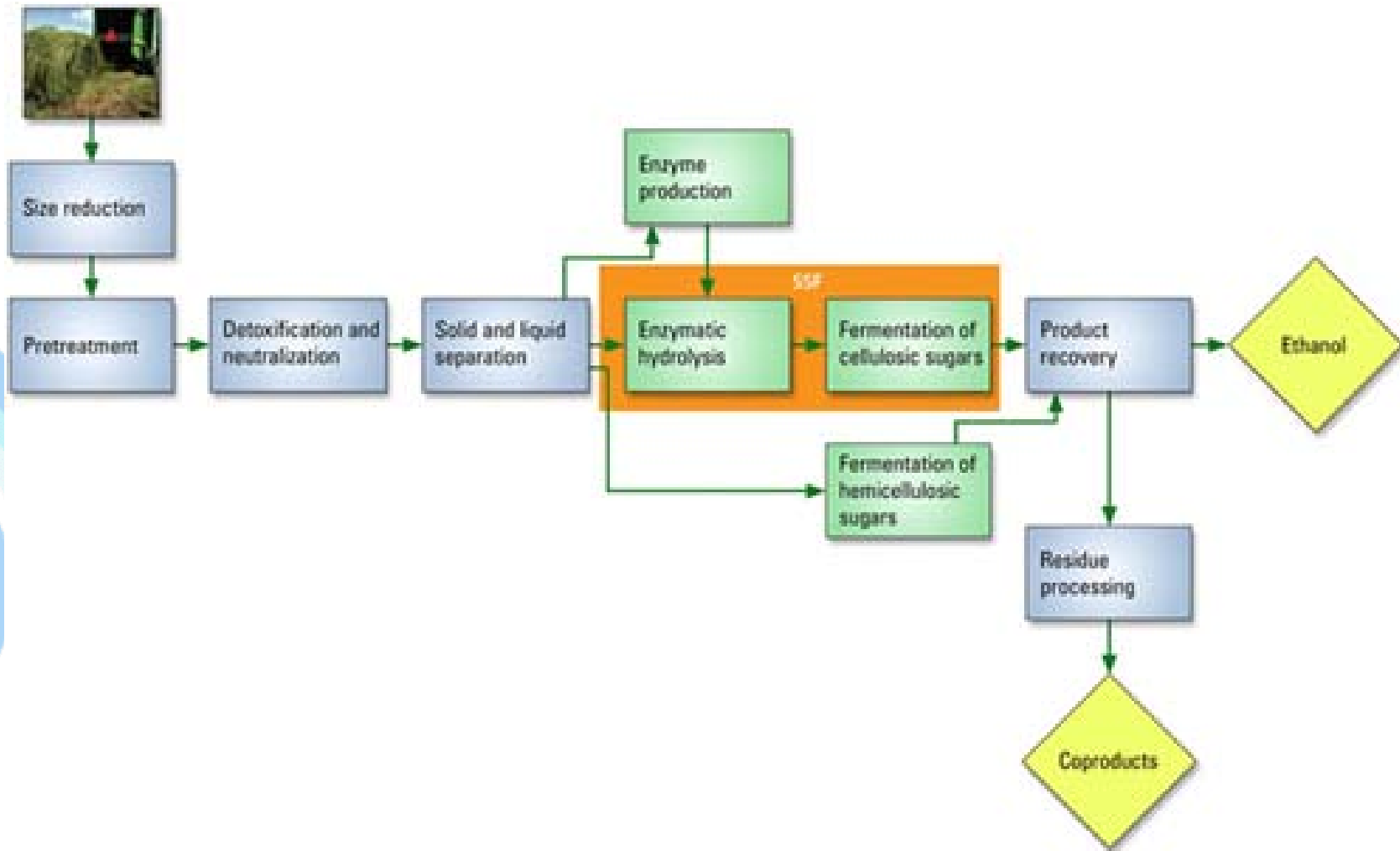


Consumer Reports October 2006

# Sources of Lignocellulose



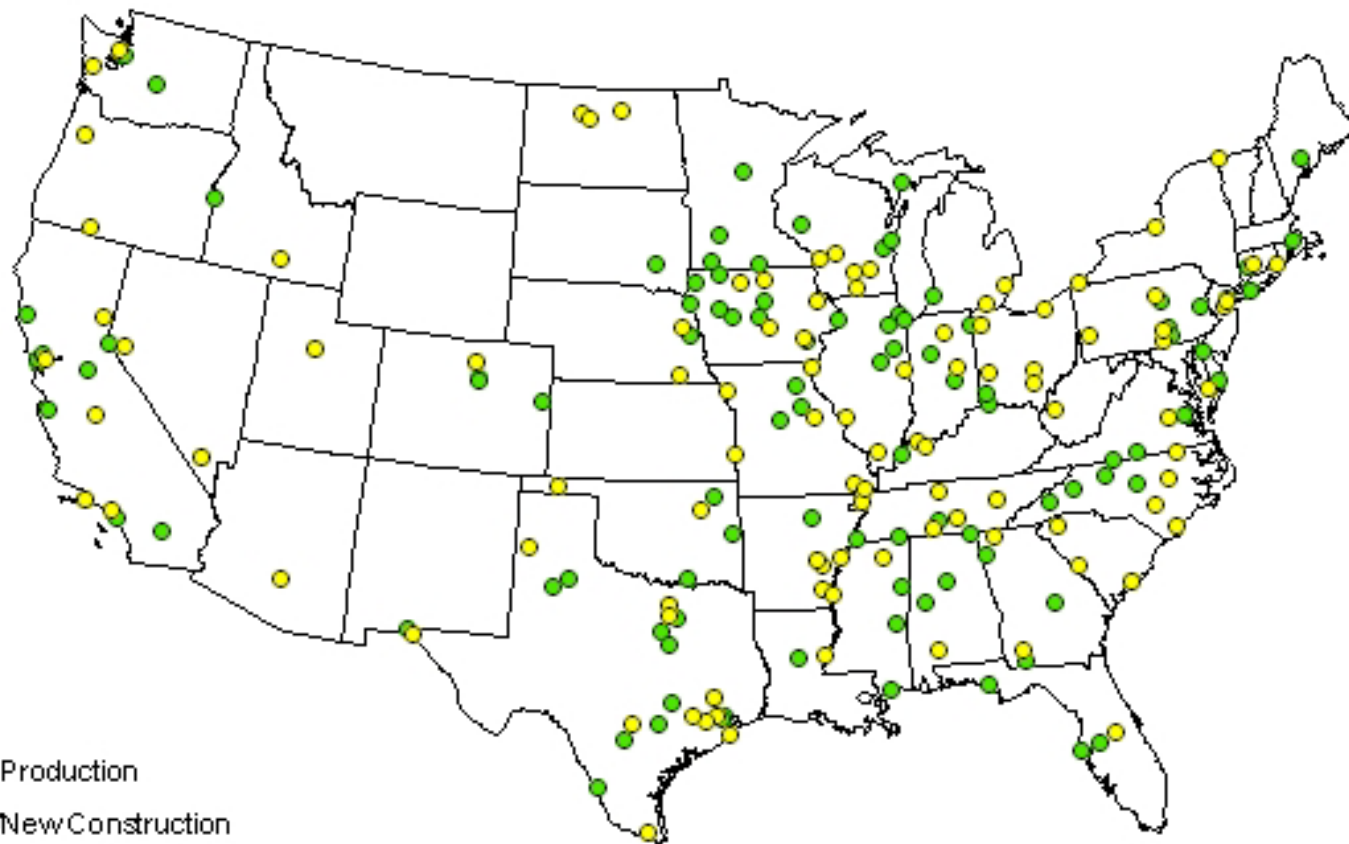
# Cellulosic Ethanol Process



# Biodiesel Facility



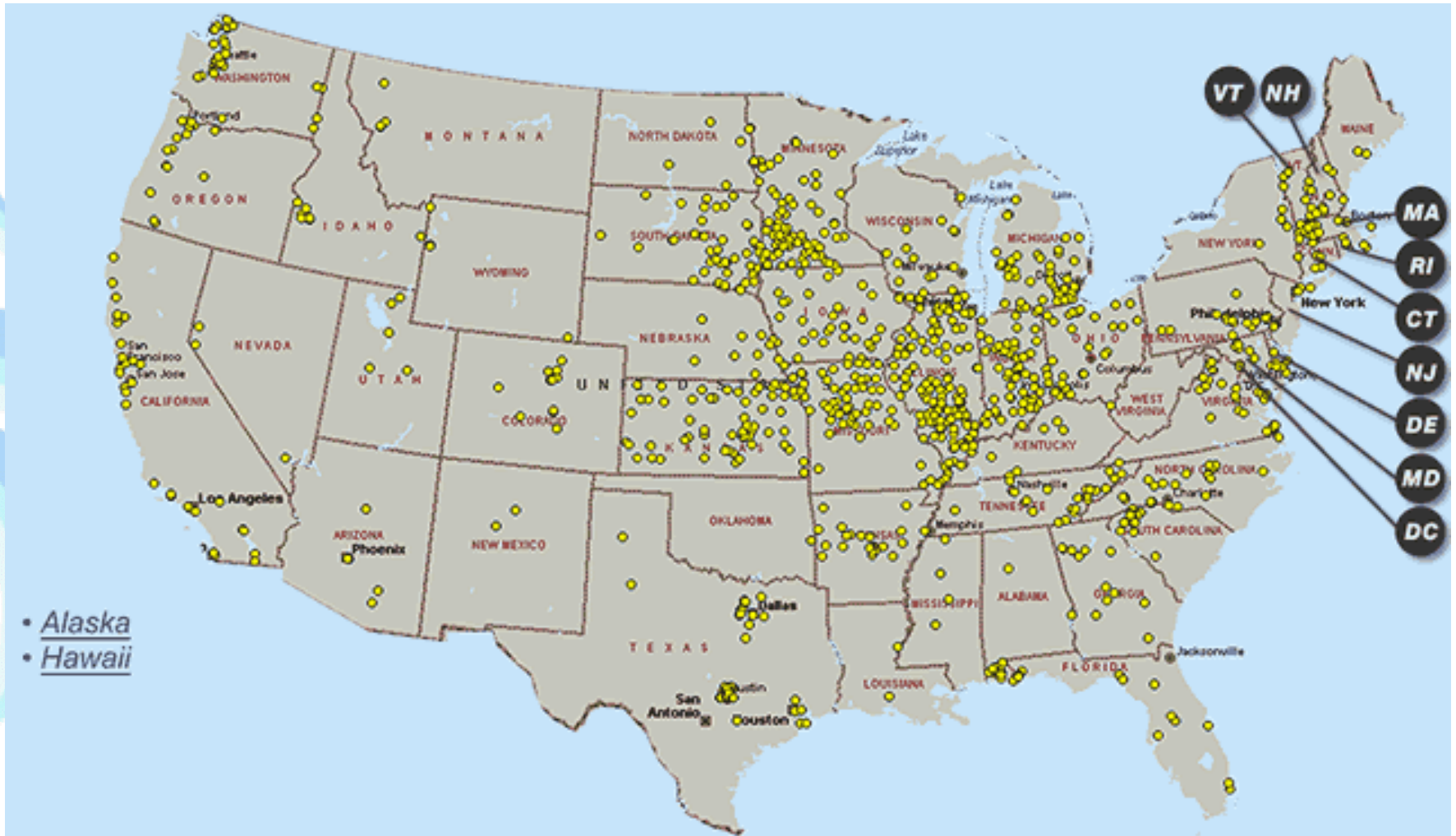
# Biodiesel Production Facilities



- Currently in Production
- Expansions/New Construction



# Biodiesel Fueling Stations



# Conclusions

- **Further information will be presented concerning bioenergy technologies through out the BioEnergy Forum**
- **West Virginia is late to the game**
  - No ethanol facilities
  - 2 biodiesel facilities (1 under construction + 1 planned)
  - Few commercial ethanol filling stations
  - No commercial biodiesel filling stations
  - Little production of ethanol and biodiesel feedstocks
- **West Virginia may have a brighter future in biomass gasification and cellulosic ethanol**