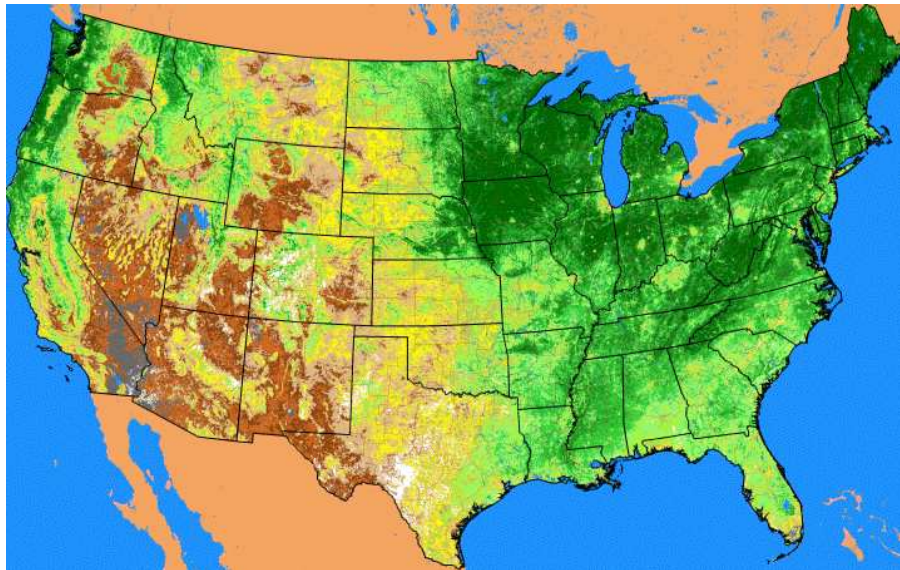


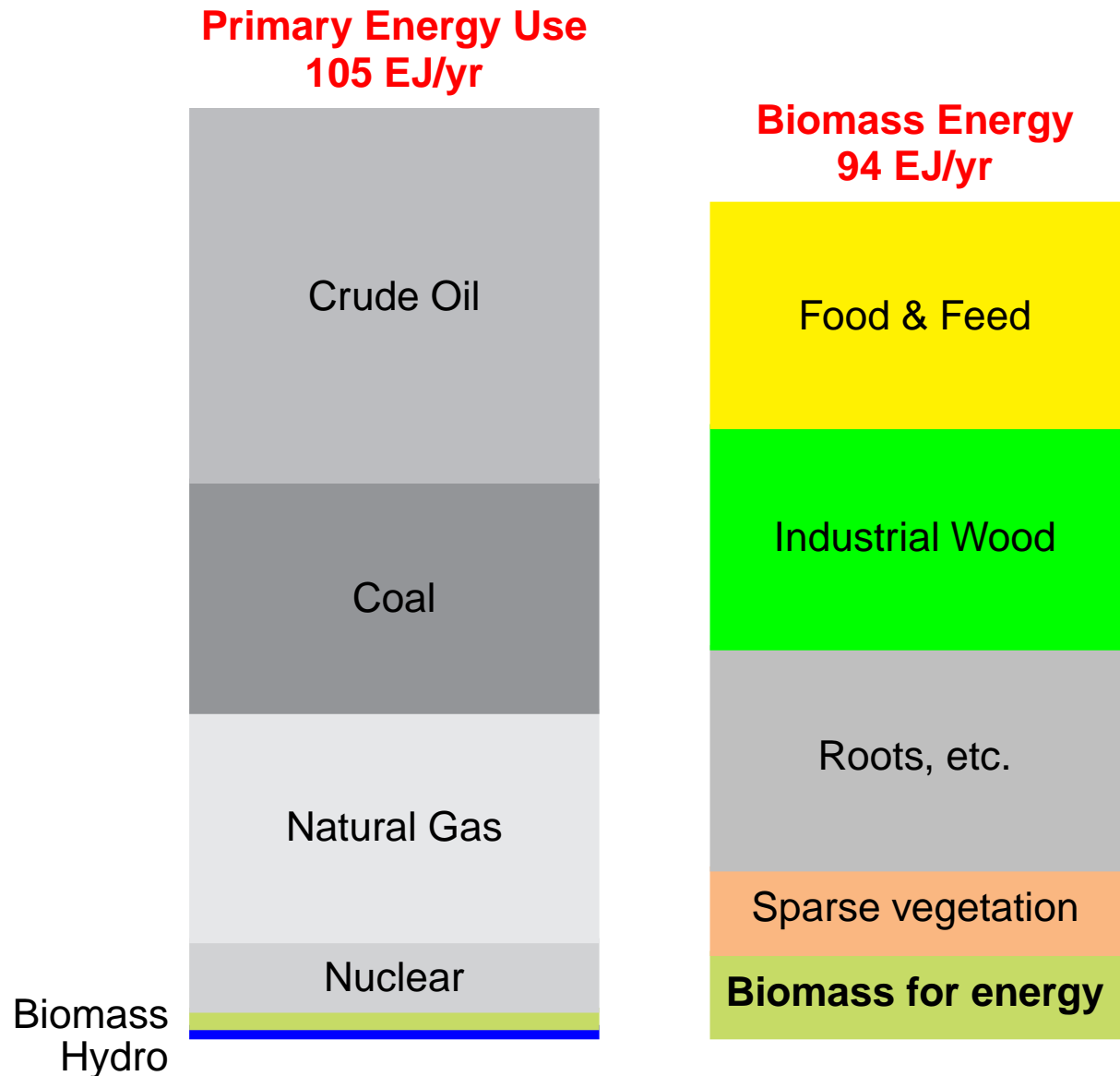
# The United States of America Meets the Planet Earth



**Tad Patzek, Civil & Environmental Engineering, U.C. Berkeley**

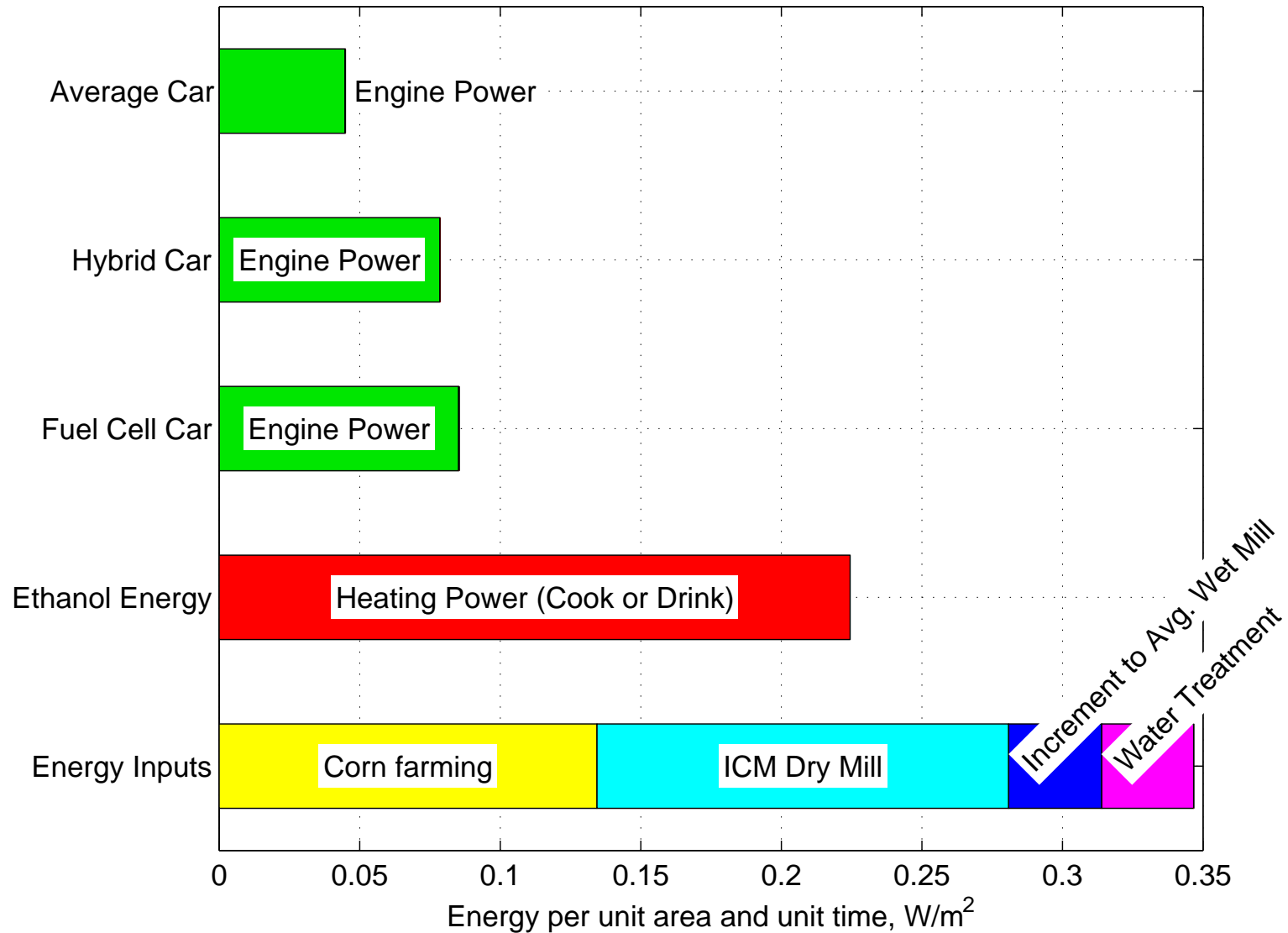
August 23, 2005, National Press Club

# We Burn More Than Plants Produce

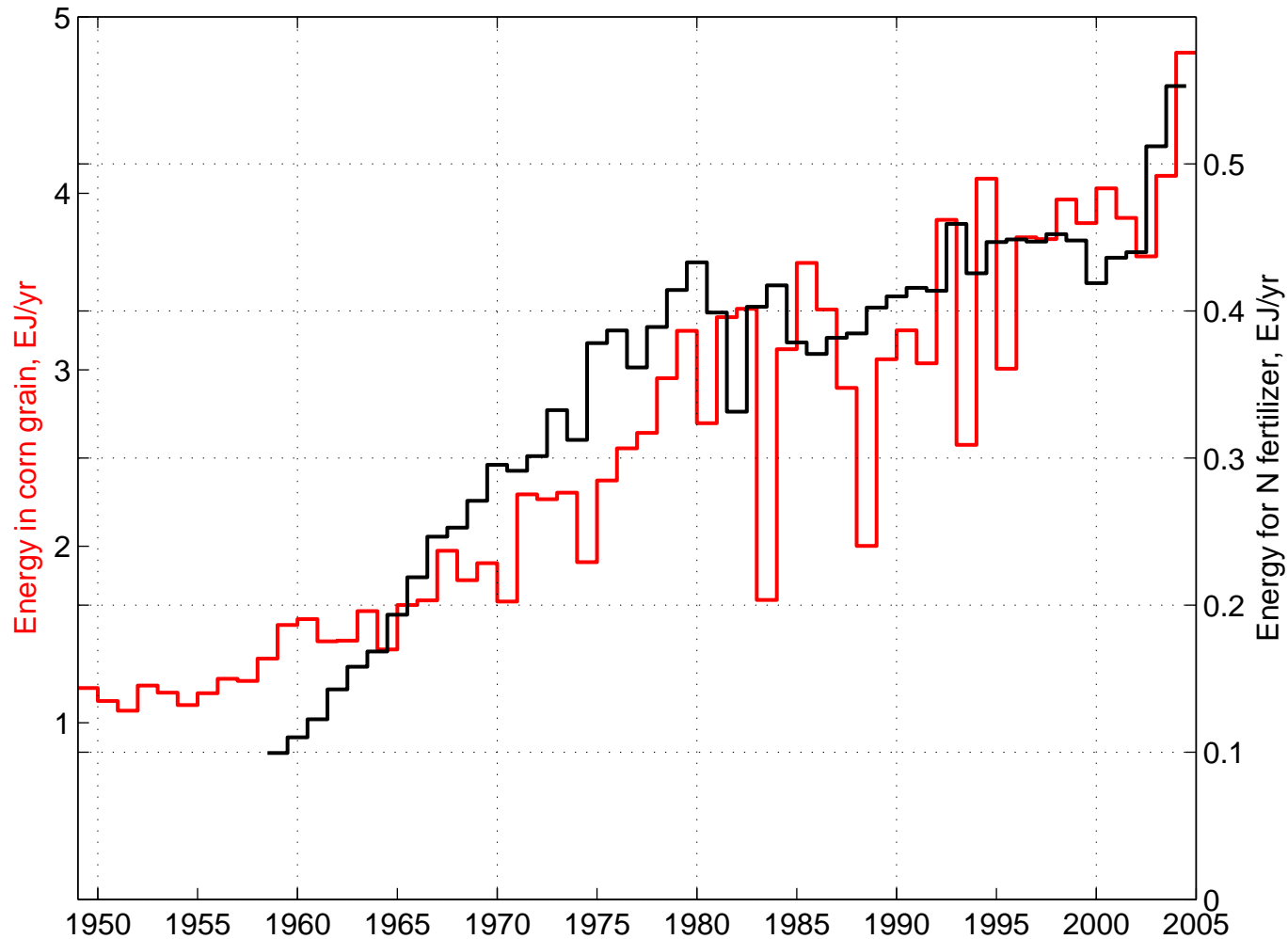


Sources: Good & Bell, 1980; Patzek, 2005

# Corn Ethanol is Inefficient

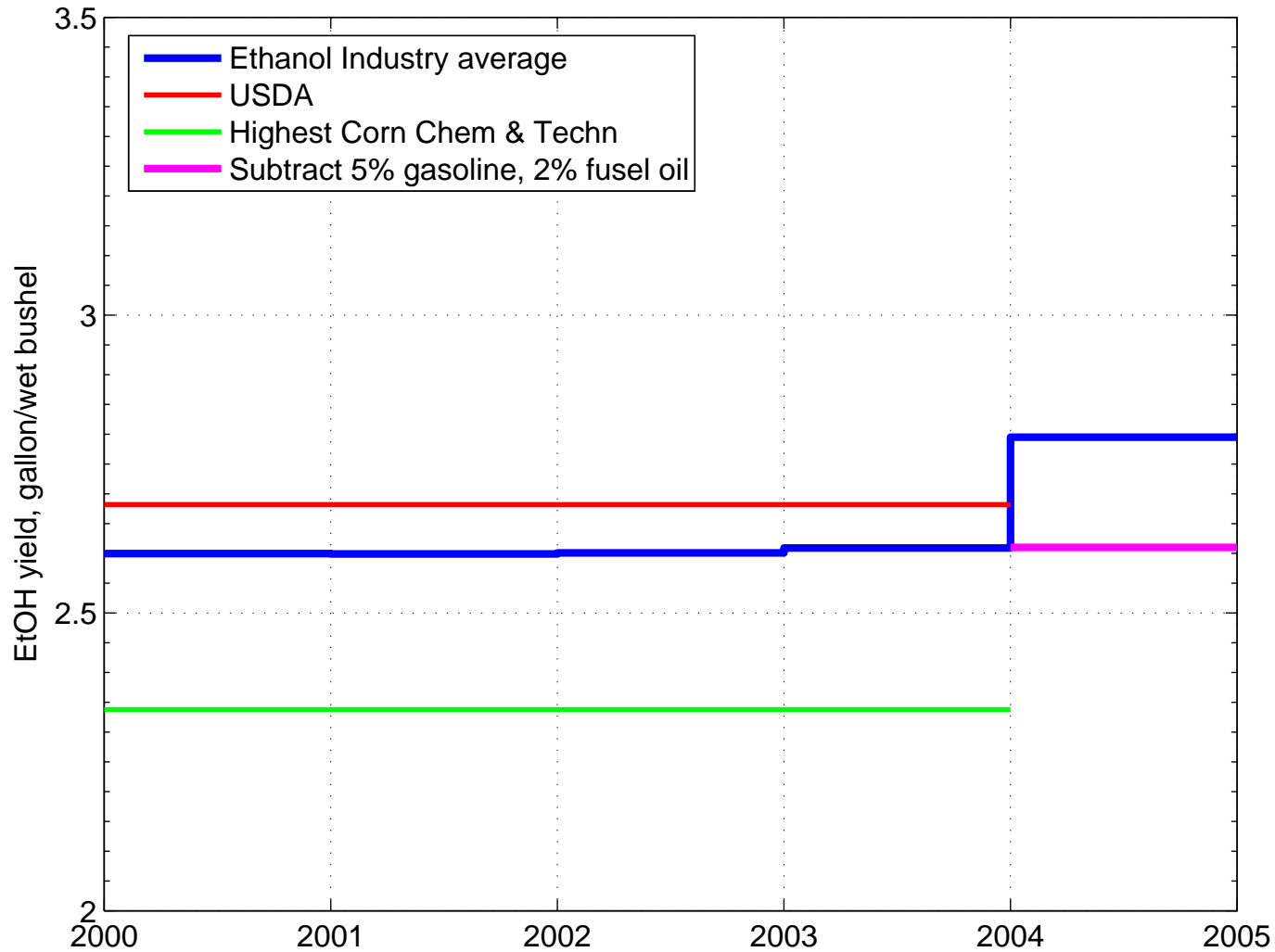


# 5 × More Corn = 5 × More Nitrogen Over the Last 50 Years...



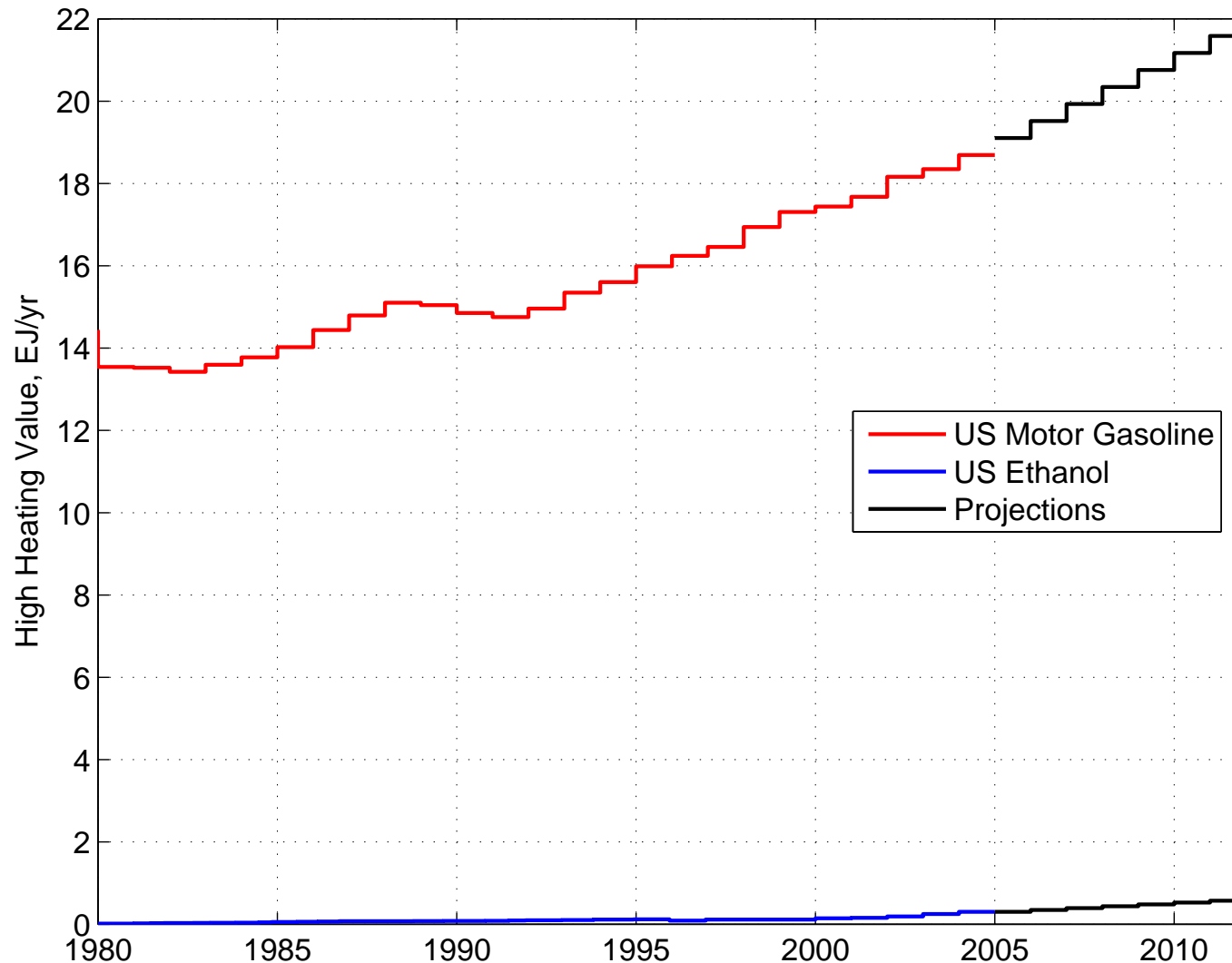
Sources: USDA, The Fertilizer Institute, Patzek 2004

# Ethanol Yield



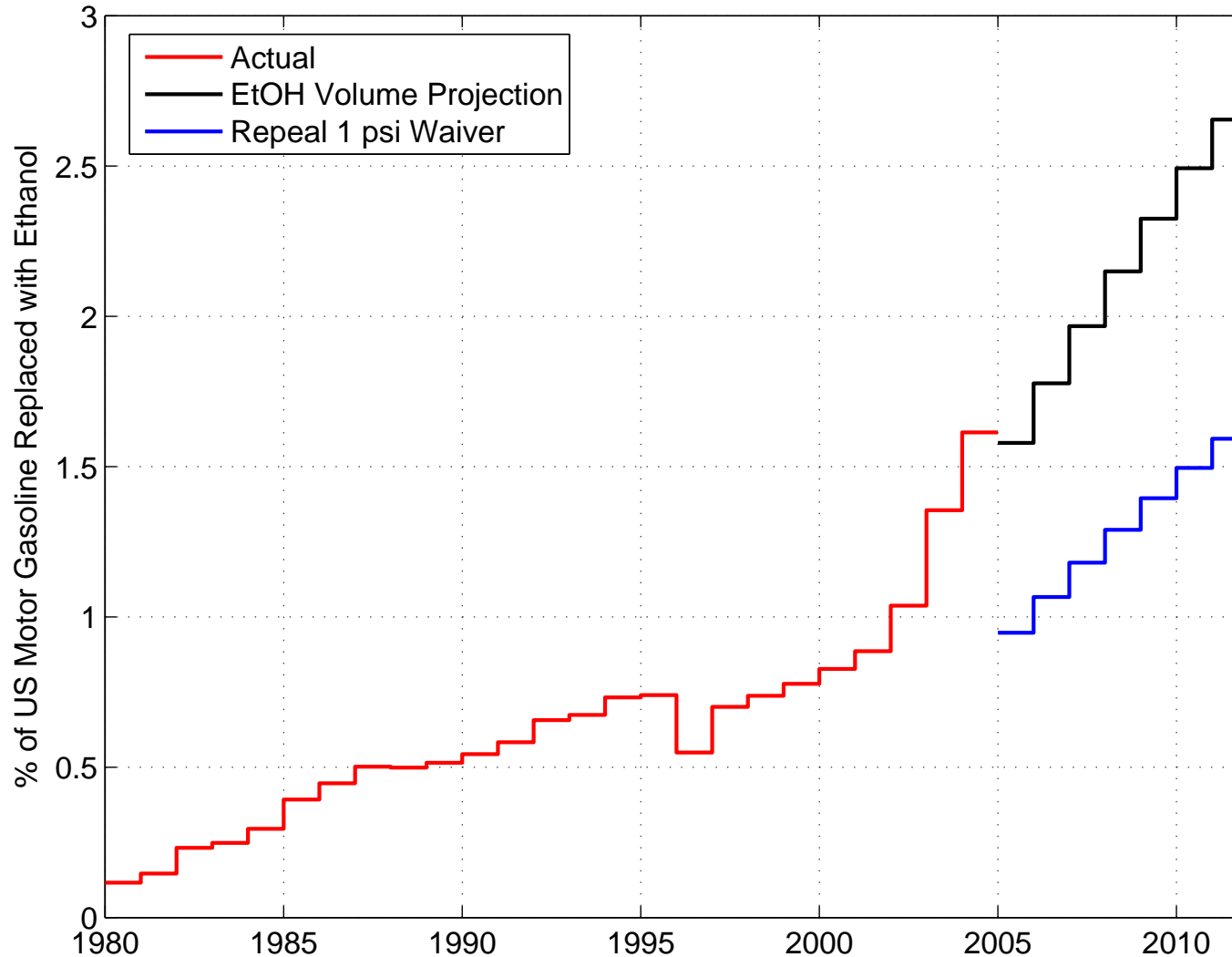
Source: Renewable Fuels Association, 2004 Ethanol Industry Outlook

# U.S. Ethanol vs. Motor Gasoline



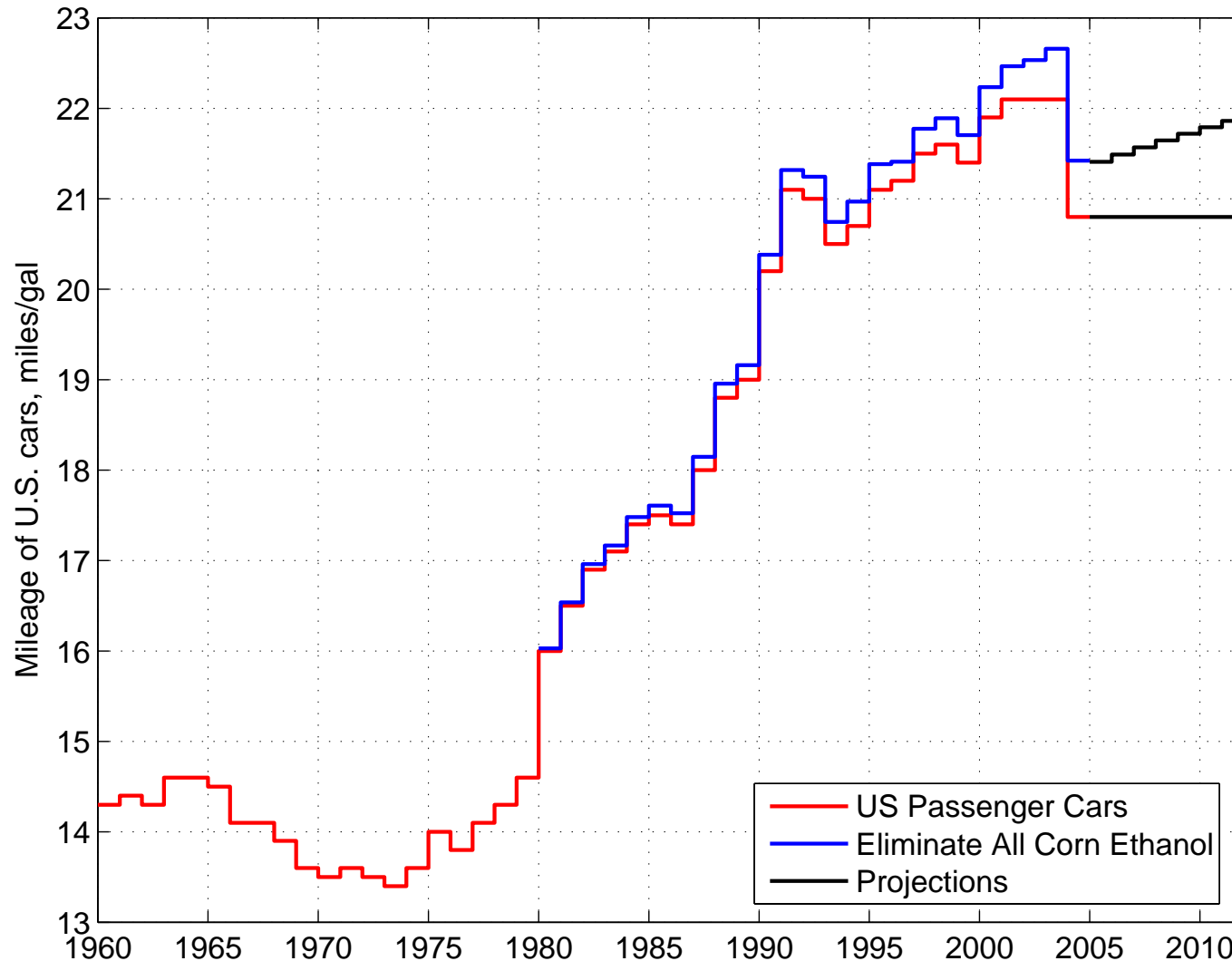
Sources: DOE EIA, 2004 Ethanol Industry Outlook, Energy Bill

# Ethanol as Percent of U.S. Gas



Sources: DOE EIA, 2004 Ethanol Industry Outlook, Energy Bill

# U.S. Ethanol $\approx$ Inflated Car Tires



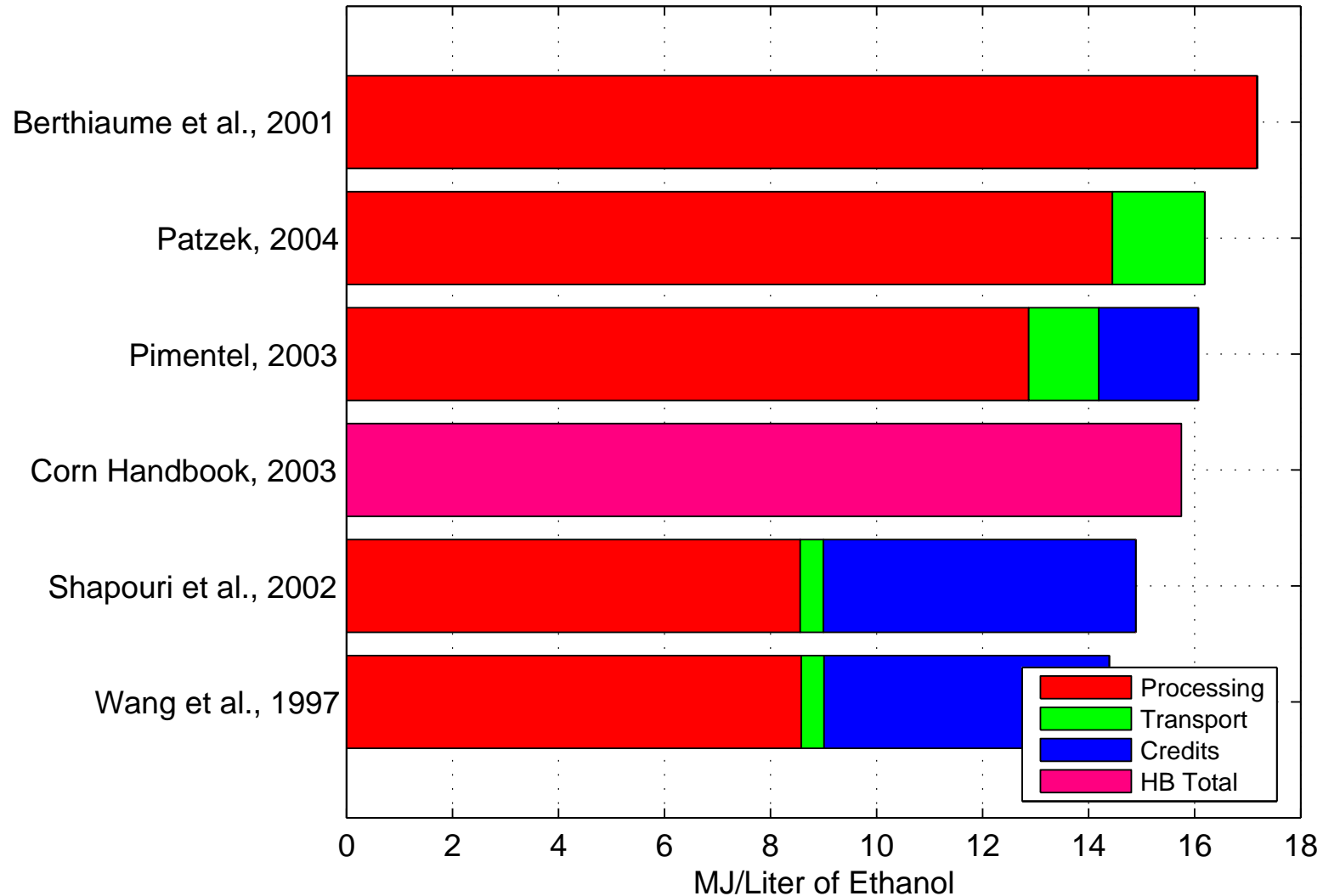


# Backup Slides

---

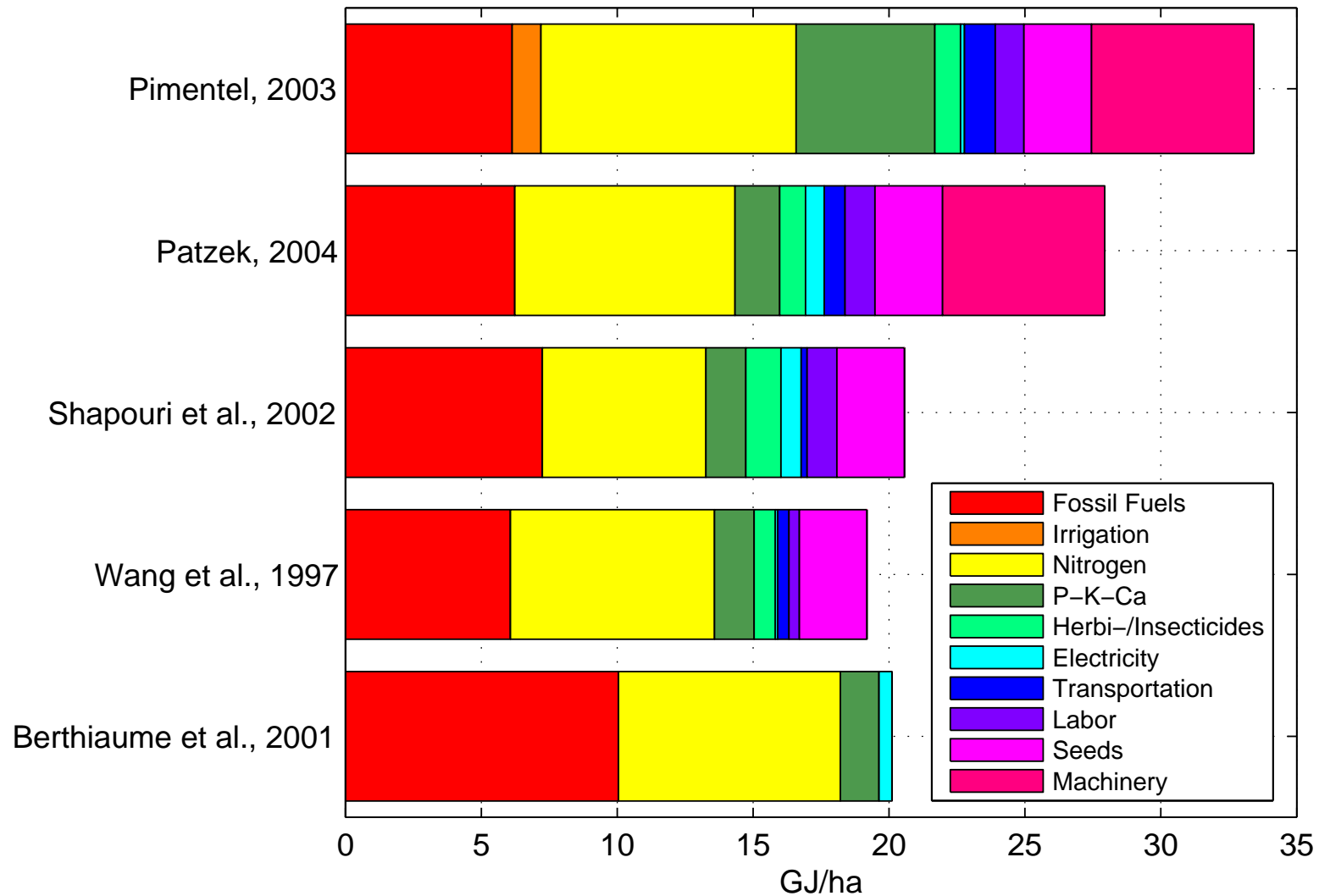
Just in case...

# Energy to Distill Ethanol

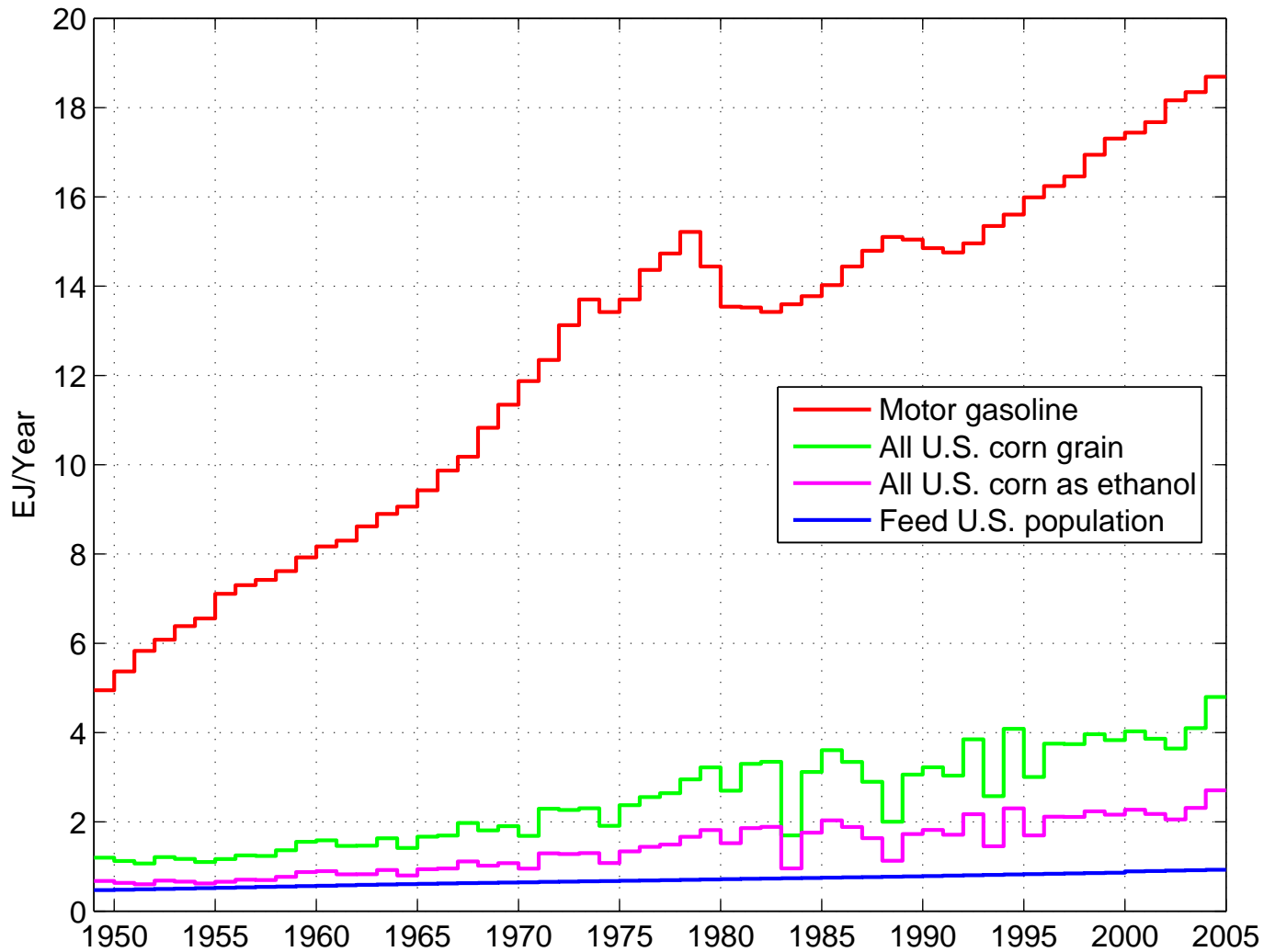


Source: Patzek, 2005. Illinois guidelines, excluding transport, 14.5 MJ/L

# Energy to Grow Corn

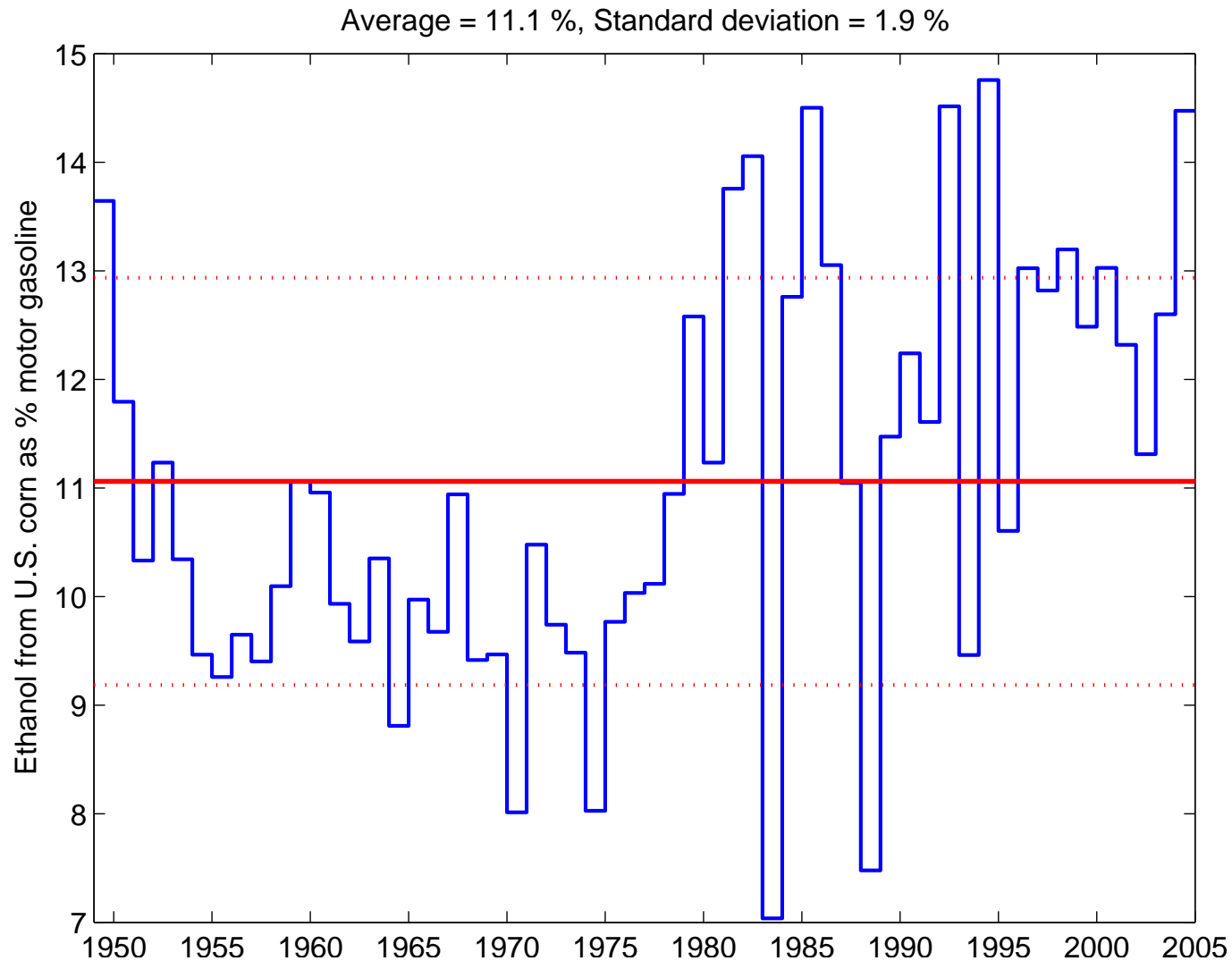


# Convert **All** U.S. Corn to Ethanol

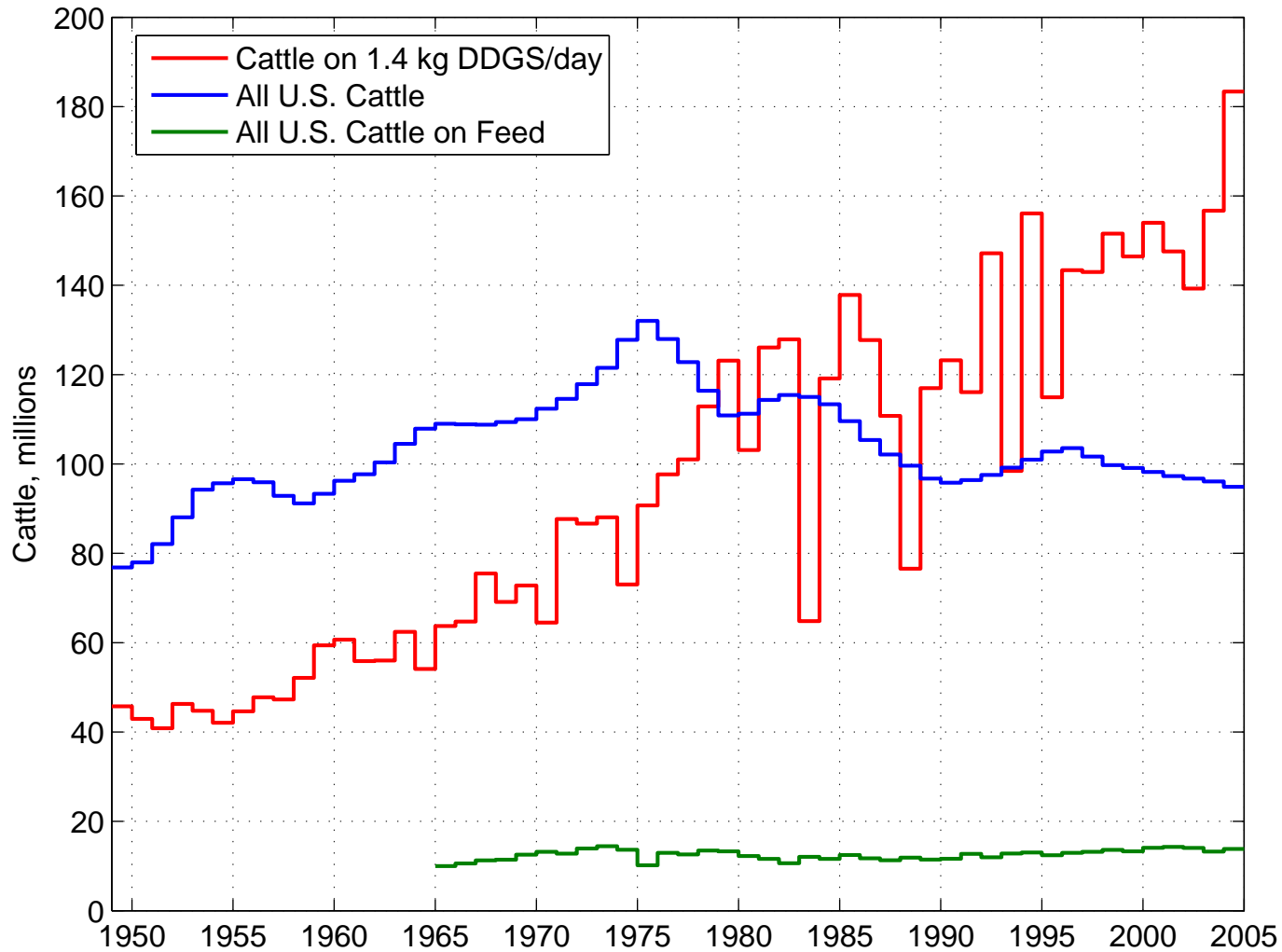


Sources: DOE EIA, USDA, Patzek 2004

# Ethanol from **All** Corn = 11% Gas



# Cows Fed with **All** Byproducts



Sources: USDA, Kansas Corn Growers, Patzek 2004