Biofuels, Food & Feed Tradeoffs

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Farm Foundation

USDA's Office of Energy Policy and New Uses

Rural Development

Future U.S. Bioenergy Policy Alternatives

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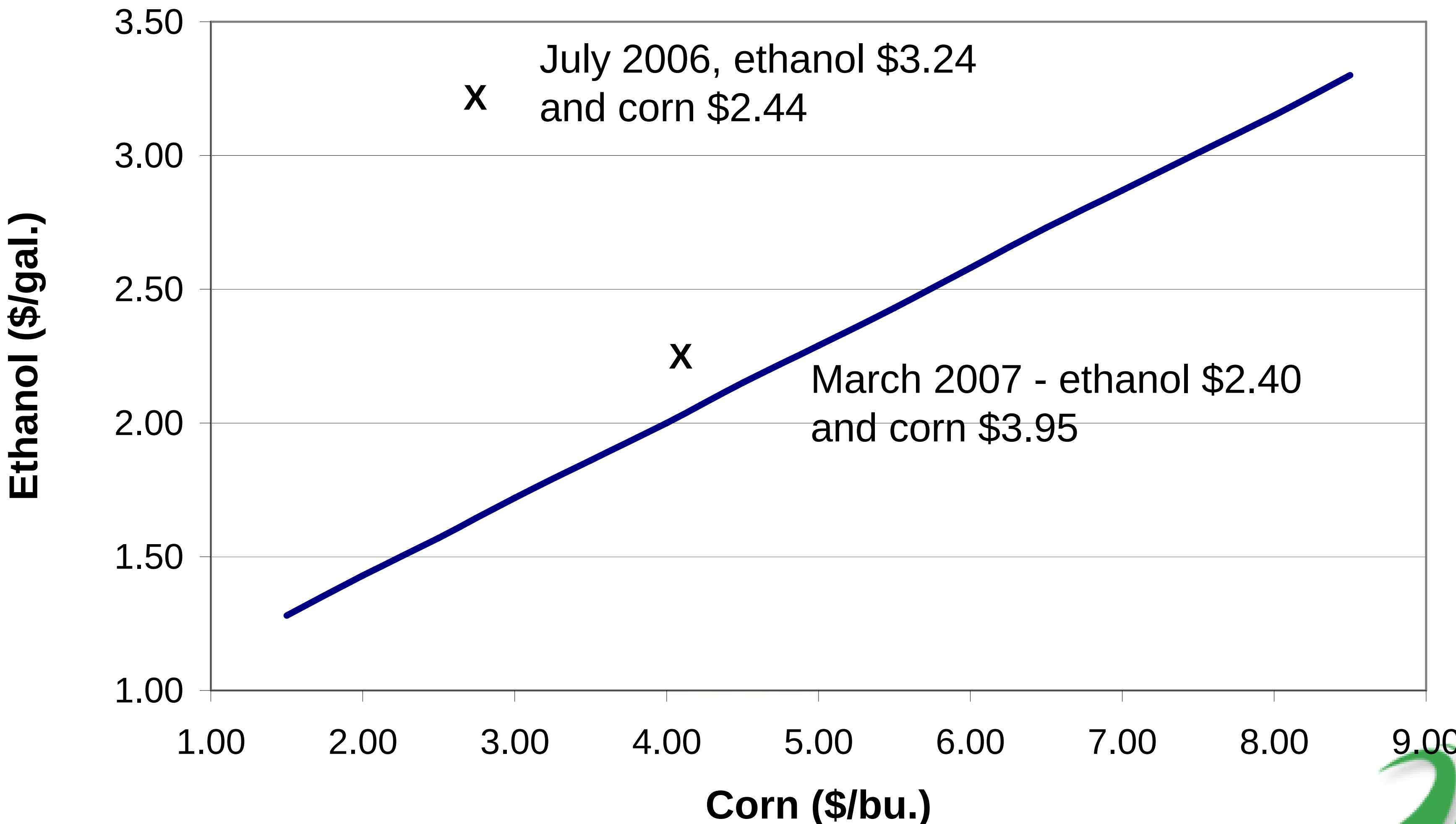
Policy History

- The US has subsidized ethanol since 1978 with a subsidy ranging between 40 and 60 cents per gallon.
- The current federal subsidy is 51 cents per gallon, and there are some state subsidies as well.
- Koplow calculates total subsidies for 2006 to range between $1.05 and $1.38 per gallon of ethanol – likely high but does illustrate that the industry has considerable subsides.

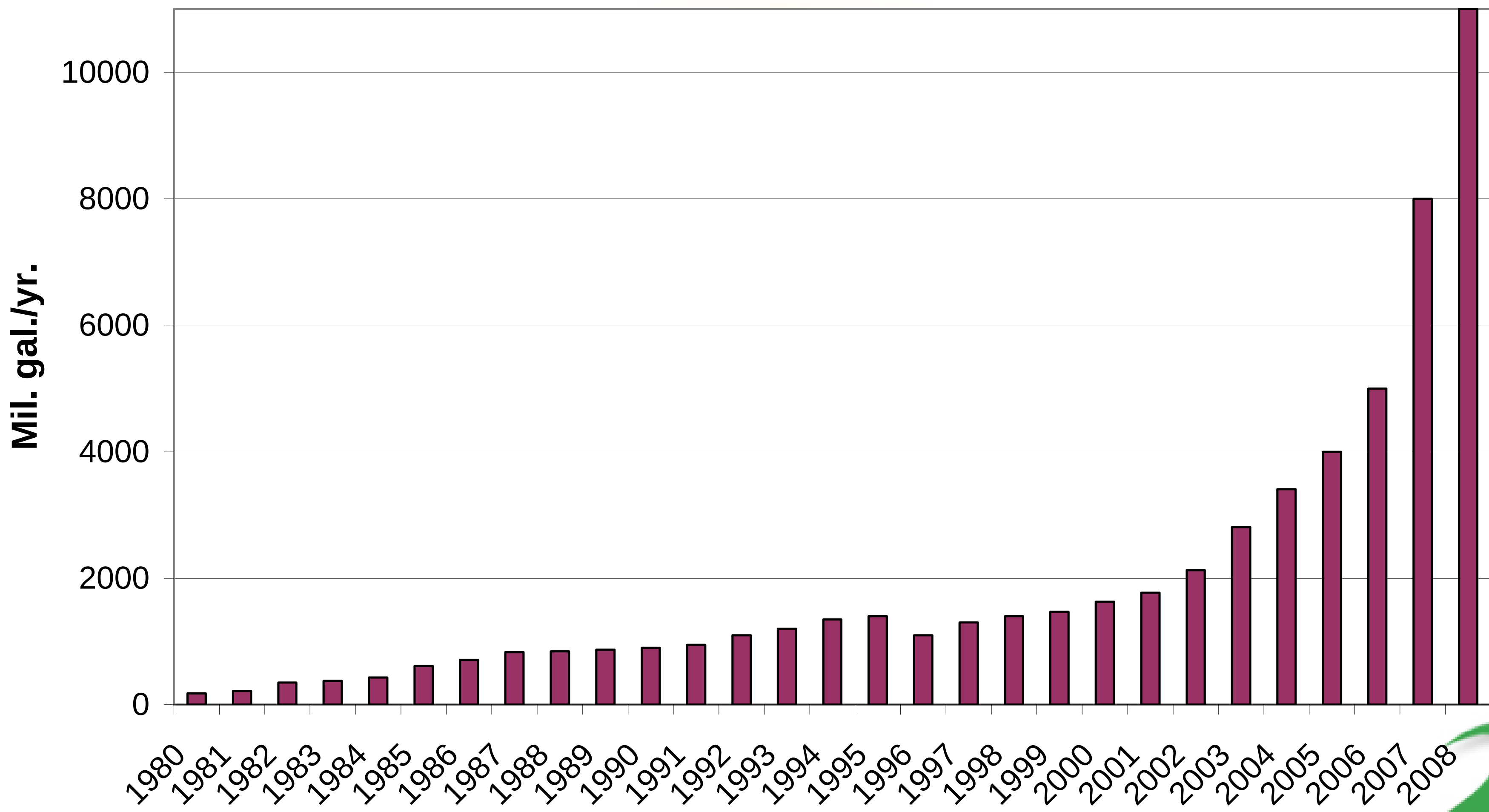
Ethanol Economics

- Ethanol has value as energy and as an additive to gasoline
  - The energy content is about 68% of gaslone
  - It has value as an octane enhancer since it has octane of 112 compared with 87 for regular gasoline
- The additive value has varied considerable through time, averaging 25 cents per gallon over the past 7 years but currently 55 cents

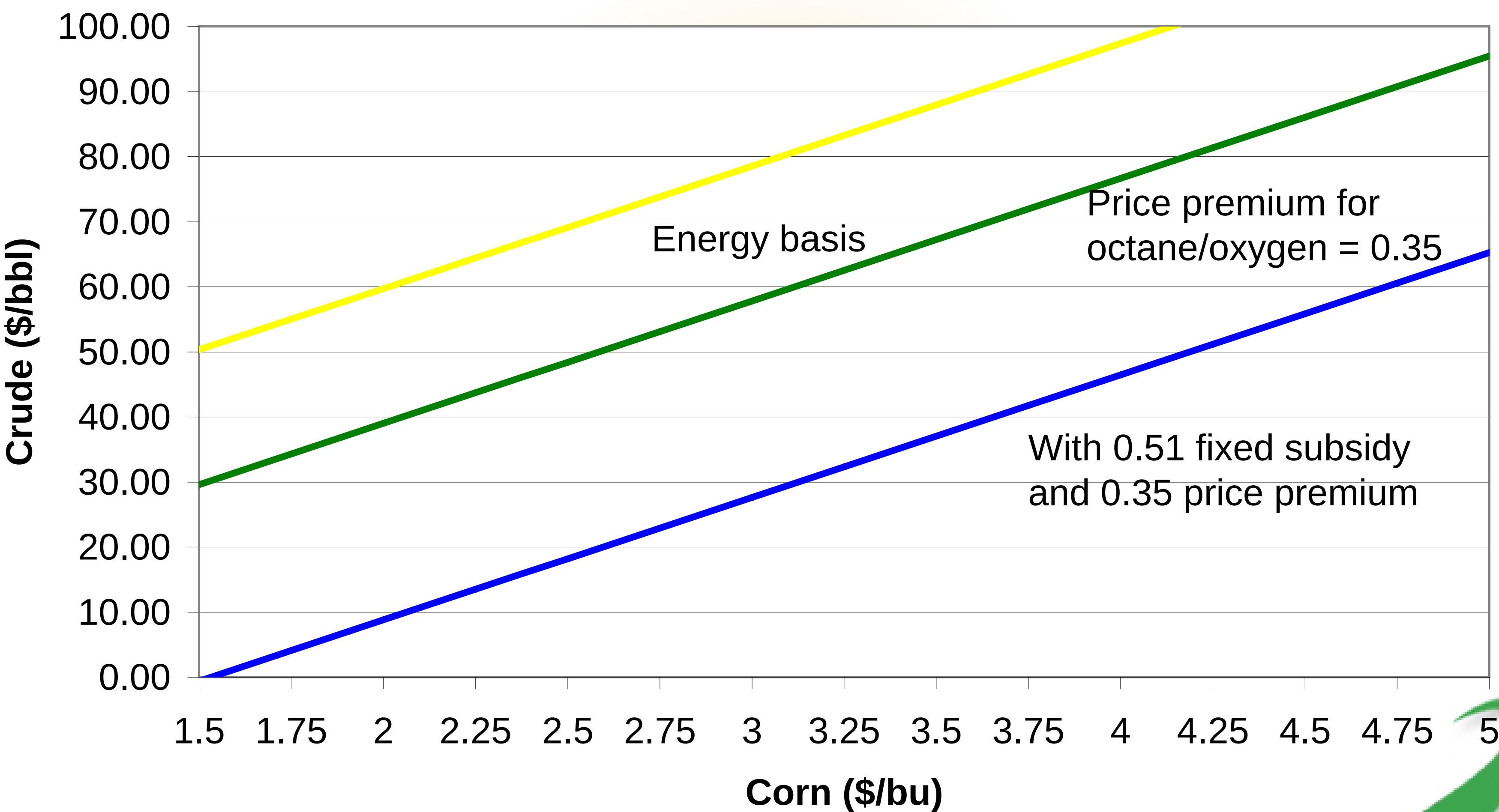
Ethanol and Corn Cost Breakeven



Ethanol Production



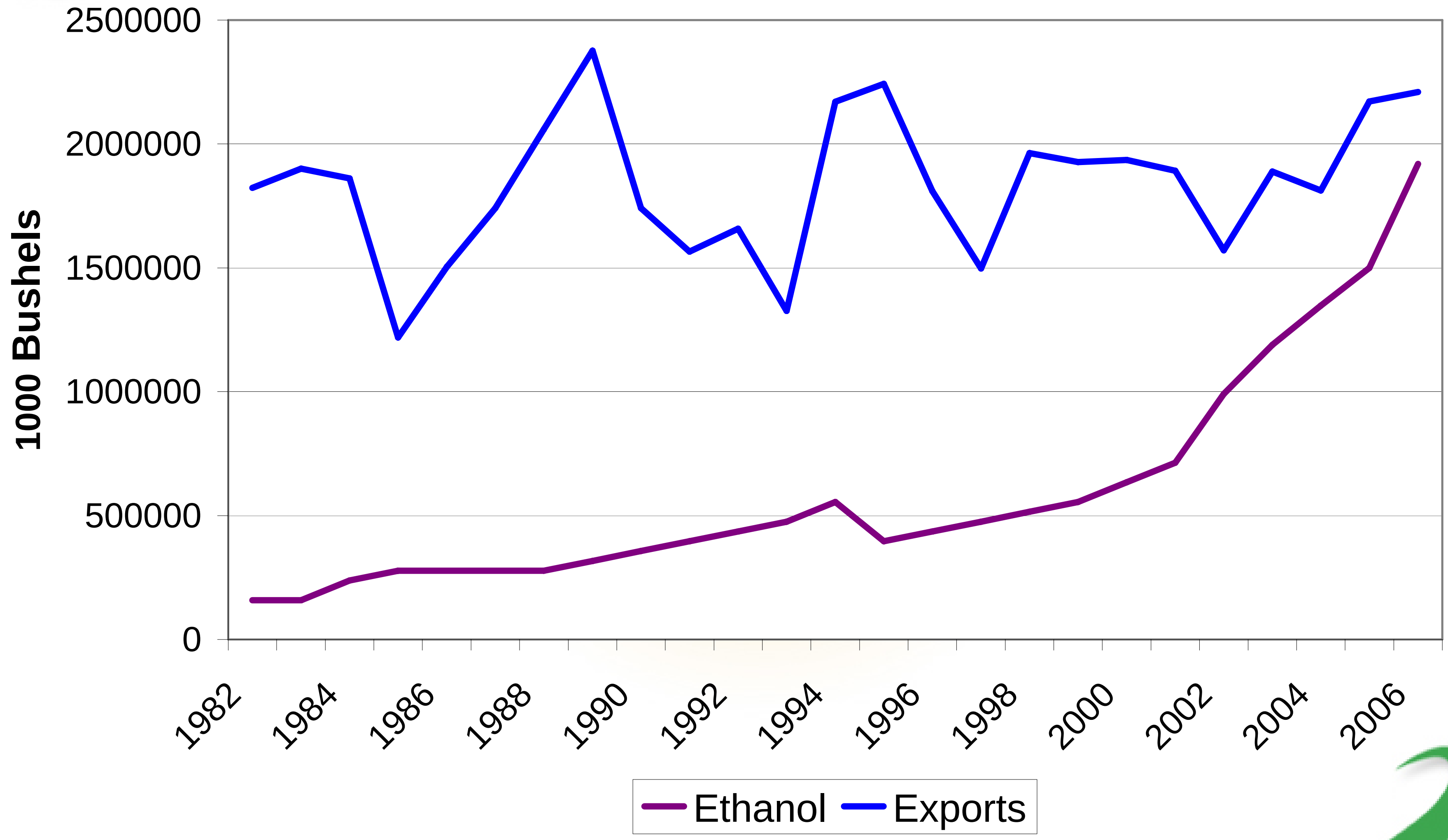
Breakeven Corn and Crude Prices with Ethanol Priced on Energy and Premium Bases Plus $0.51 Ethanol Subsidy



Corn Use for Ethanol

- Currently about 1.9 bil. bu. of corn is used for ethanol – about 17% of the crop
- That may go near 3.0 bil. bu. in 2007 – a quarter of the crop
- It could go to 4 bil. bu. in 2008 – a third of the crop
- With more corn used for ethanol, we might expect:
  - More corn to be produced and higher prices – already here
  - Less corn to be exported
  - Somewhat less corn to be fed
  - Higher price volatility

Corn Use for Exports and Ethanol



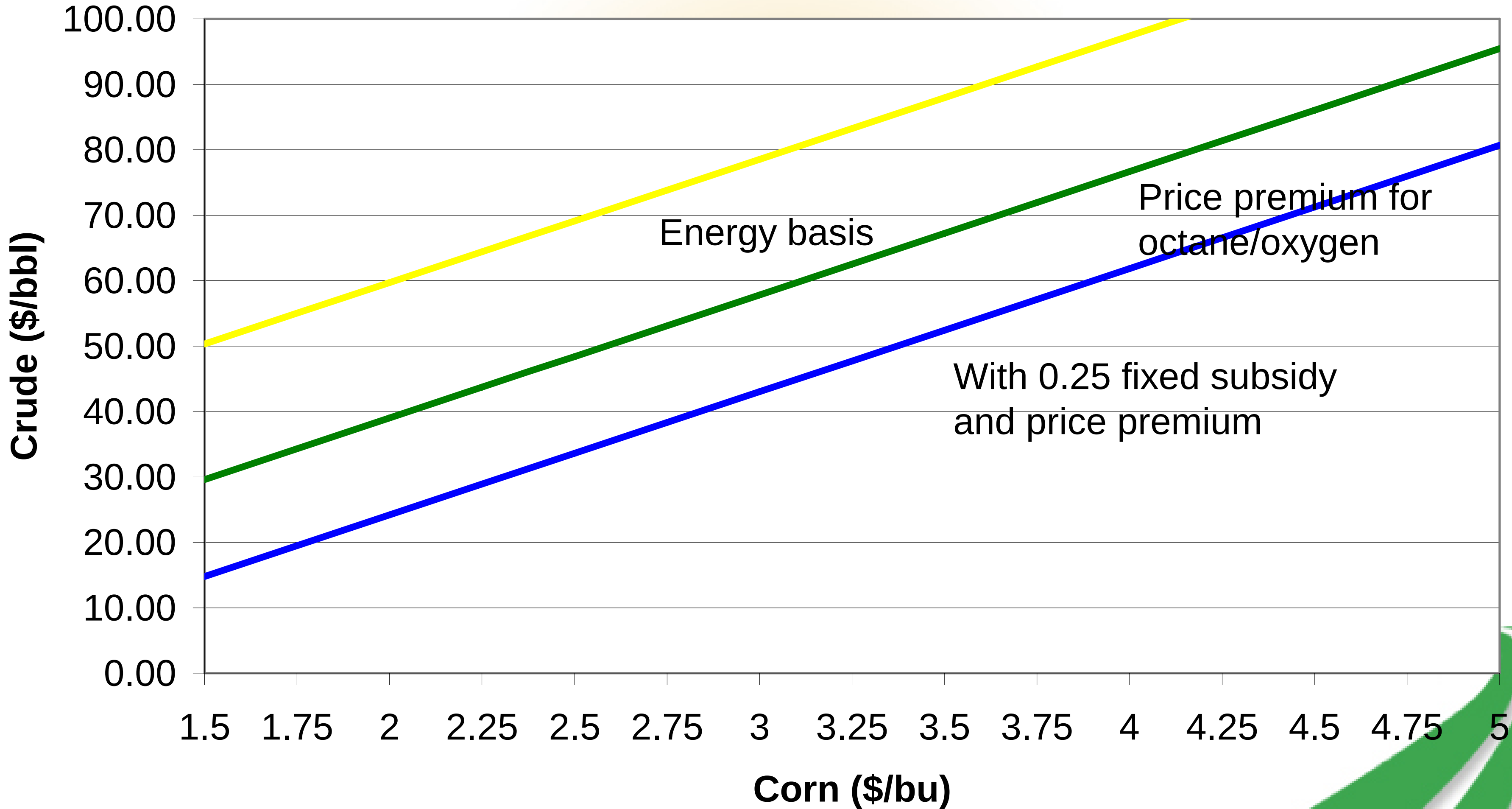
Policy Alternatives

- Stay the course with current policy
- Reduce the fixed subsidy
- Variable subsidy
- Alternative fuel standard
- Combination of alternative fuel standard and variable subsidy
- Special incentives for cellulose ethanol

Stay with Current Policy

- Staying with the current fixed 51 cent per gallon subsidy would likely result in markets keeping the corn price high and stimulating investment in ethanol until the corn price chokes off profitability
- There would be some food cost increases due to higher corn prices
- Global impacts are very important and quite difficult to estimate

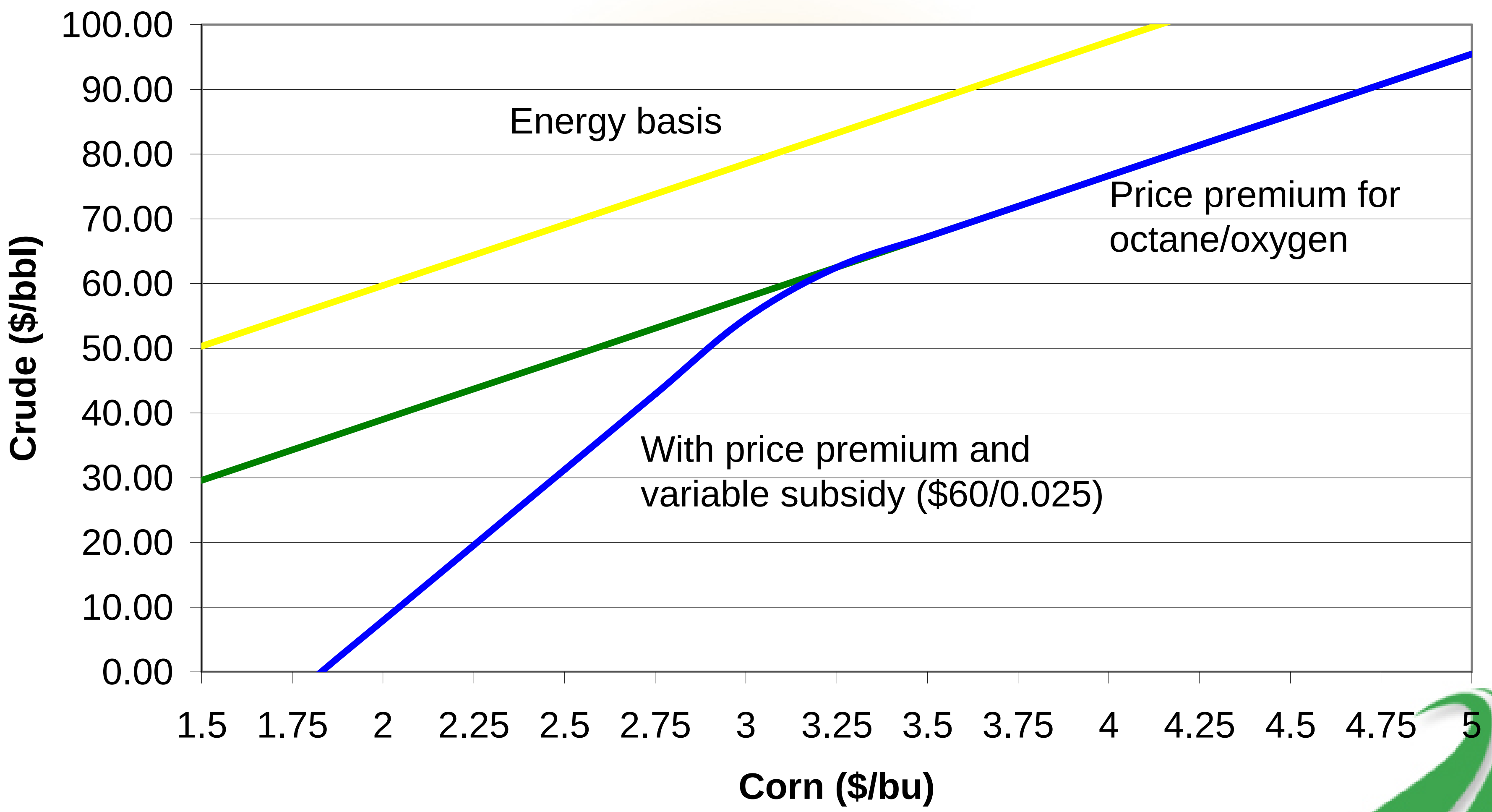
Breakeven Corn and Crude Prices with Ethanol Priced on Energy and Premium Bases Plus $0.25 Ethanol Subsidy



Variable Subsidy

- A subsidy that varies with the price of crude oil would be a means of reducing the cost of the government subsidy while still providing a safety net if crude oil prices fall significantly
- The variable subsidy has two parameters:
  - Crude price at which it begins ($60)
  - Increase in the subsidy for each $1 crude falls below that price (2.5 cents/$)

Breakeven Corn and Crude Prices with Ethanol Priced on Energy and Premium Bases plus Variable Ethanol Subsidy



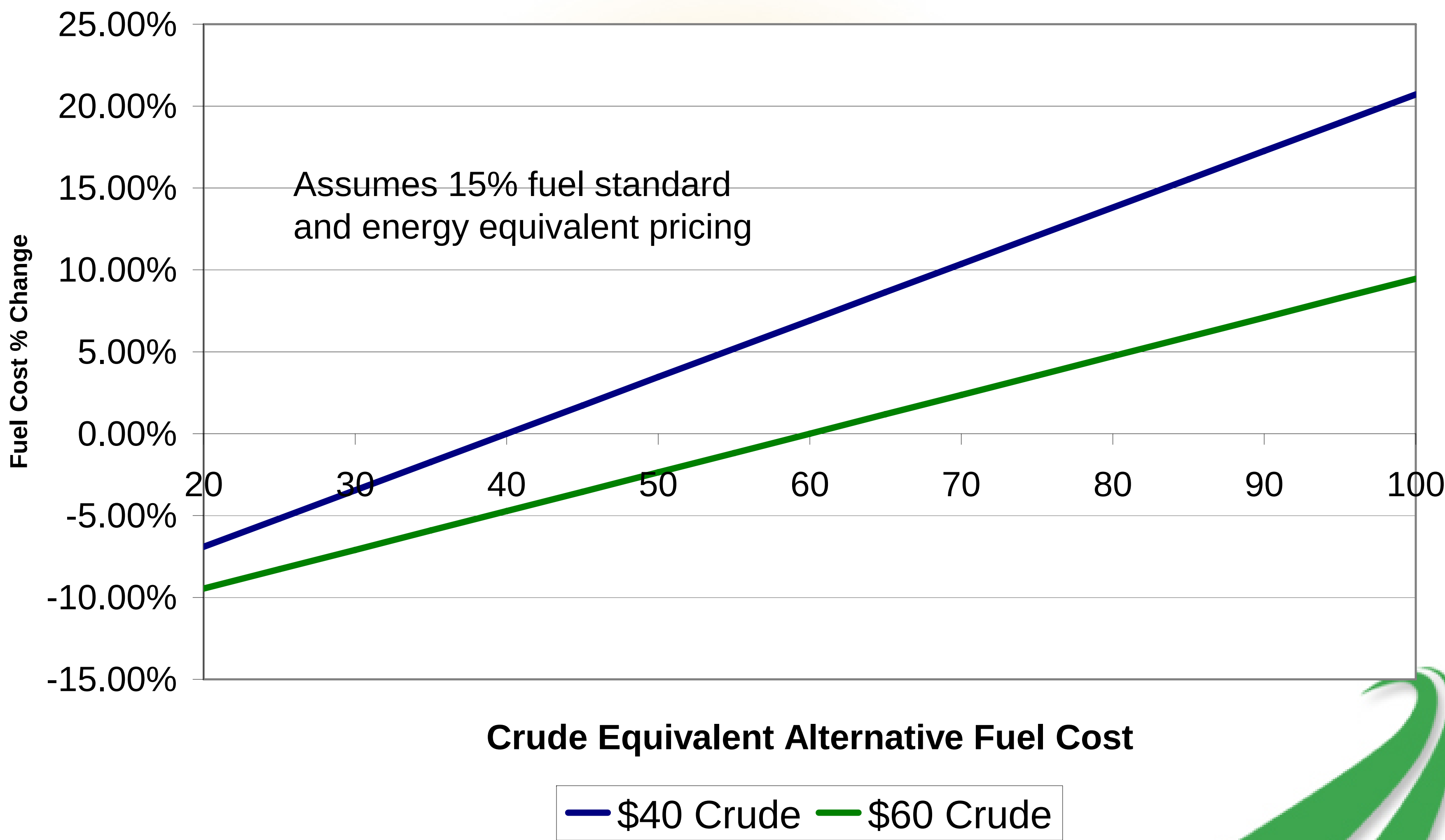
Alternative Fuel Standard

- In his State of the Union message, the President proposed a 35 billion gallon alternative fuel standard by 2017
  - Current production is about 5.3 billion
  - Seven fold increase in 10 years
- The administration estimates this would replace 15% of projected 2017 gasoline consumption
- With a binding mandate in place, it would no longer be necessary to subsidize alternative fuels

Difference Between a Fuel Standard and a Subsidy

- The fundamental difference between a fuel standard and a subsidy is who pays:
  - With a subsidy, the taxpayers pay the tax credits received by fuel blenders – it is part of the government budget
  - With a fuel standard, consumers see changes in prices at the pump depending on what the alternative fuel costs relative to gasoline from crude oil

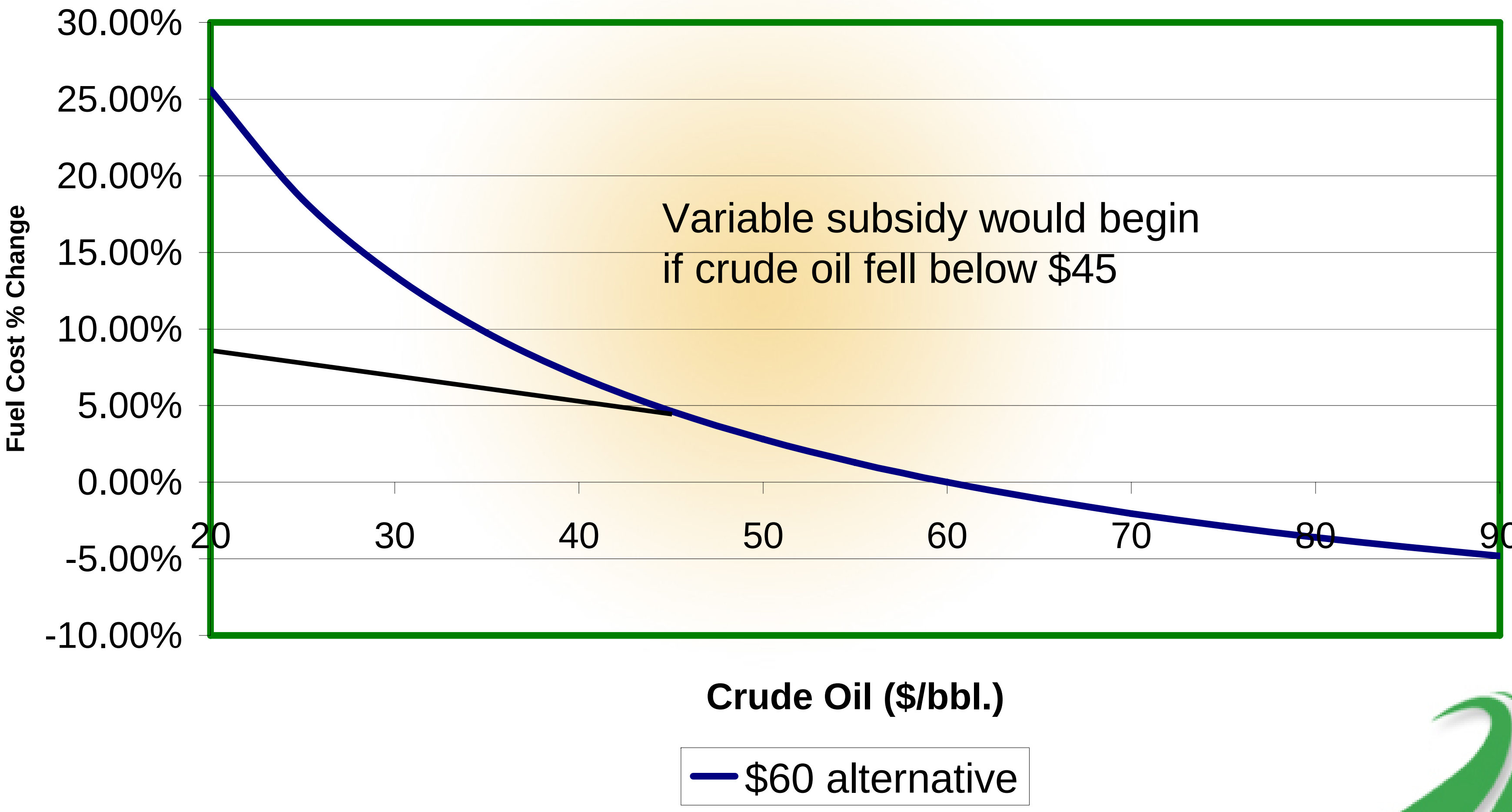
Fuel Cost Change from Fuel Standard



Combination of Fuel Standard and Variable Subsidy

- An iron-clad fuel standard may be difficult to legislate, yet potential investors need some assurance the standard will hold
- The fuel standard combined with a variable subsidy might be a viable option

Cost of A Fuel Standard with a Variable Subsidy



Cellulose Ethanol Incentives

- One of the issues with our current system is that investors will continue to prefer corn ethanol over cellulose because cellulose is riskier
- We may need to consider other options for cellulose ethanol at the beginning to stimulate investment:
  – Investment guarantees or purchase contracts (reverse auction)
  – Tax credits to ethanol producers for each ton of cellulose used to produce ethanol or other liquid fuel

Policy Impacts

- The current subsidy can lead to very high corn prices – beneficial to corn farmers but not to livestock producers or consumers
- With this year's ethanol production at 8 bil. gal., the subsidy will cost $4 bil., but CBO estimated in January that commodity payments will fall $4 bil. in 2007
- If we continue down the current path, it is possible the ethanol support will face considerable political opposition
- The variable subsidy or alternative fuel mandates are options
- Targeted cellulosic subsidies may need to be considered

Summing Up

- Today's high oil prices are largely demand driven
- Global recession could lead to significant oil price drops
- Investments in alternative energy sources are risky in the face of future potential price falls without policy measures that insure against major price drops
- If we want to reduce dependence on foreign oil, we must develop **policy pathways** that will lead us towards greater reliance on alternative energy
- **The policy choices we make will be critical**

Thanks very much!

Questions and Comments

For more information:

http://www.ces.purdue.edu/bioenergy