

# Outlook For Energy Alternatives

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# Outlook for Energy Alternatives Depends on Future Prices for Conventional Fuels

- Paper includes a narrative discussion of energy over the past 40 years or so, since the energy shocks of the 1970s.
- Makes a case that the recent energy price shock is in part an echo of the previous shock where..
- Collapse of prices in 1980's eventually reduced incentive to invest in resource development or efficiency.
- The era of low prices was prolonged by dramatically reduced demand from Eastern bloc countries after collapse, and China's move to more market oriented economy.
- Result: low prices lasted through the 1990's.
- Low investment in conventional resource or alternatives/ efficiency combined with then more rapid economic growth after 2000 created conditions for perfect storm.
- Political instability, Iraq war in a situation of tight demand led to escalating prices, that seemed to make little sense given long term fundamentals.

# Where do prices go next?

- Fall from 2008 highs seemed inevitable.
- Economic crises contributed to a much greater collapse than we otherwise would have seen.
- If economic crises abates, back to reasonable global growth then prices oil prices back in the \$75 to \$100 range over the next couple of decades.
- Will the 2008 price spike have an echo/
  - Dampened?
  - Exacerbated by succeeding events..

# Implications for energy alternatives

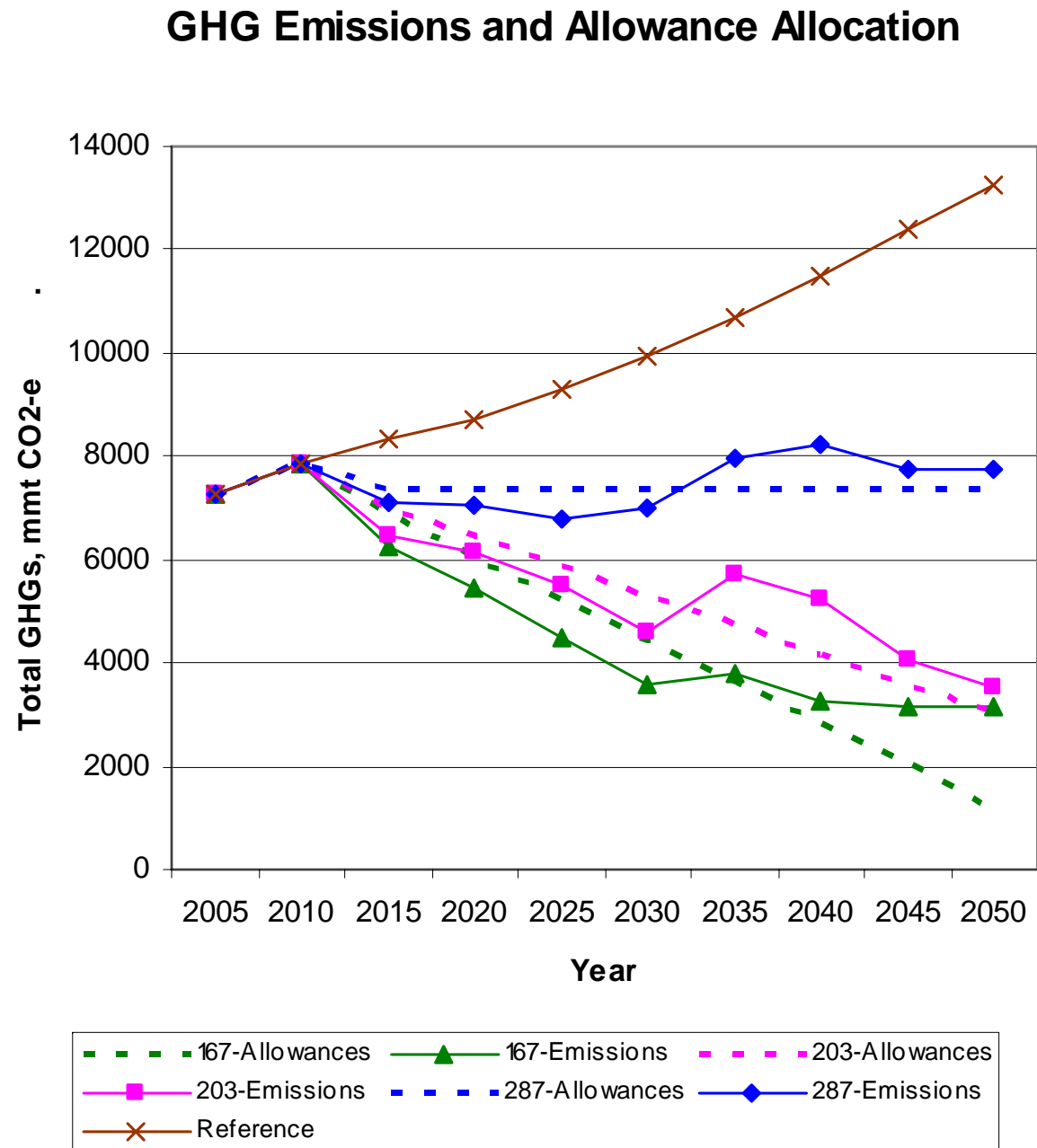
- With oil prices (and natural gas and coal) prices remaining in this moderate range there is probably not much economic incentive for many of the alternatives.
- It will remain a world that is heavily dependent on fossil fuels—in fact dirtier fossil fuels, oil sands, shale oil, coal liquids, greater reliance on coal in electricity is the likely outcome..
- Renewables will be limited. Economic only with subsidy/tax incentives, mandates and portfolio standards, and the like.
  - Without high fuels will public support for these measure wane?
- Problem with this scenario?
- The major chance for alternatives is with a broad policy to control GHGs that will tilt fuel prices, by including a CO<sub>2</sub> charge in fossil fuels, to favor low carbon alternatives.

## **Let's just look at the US and recent Congressional/Administration Proposals**

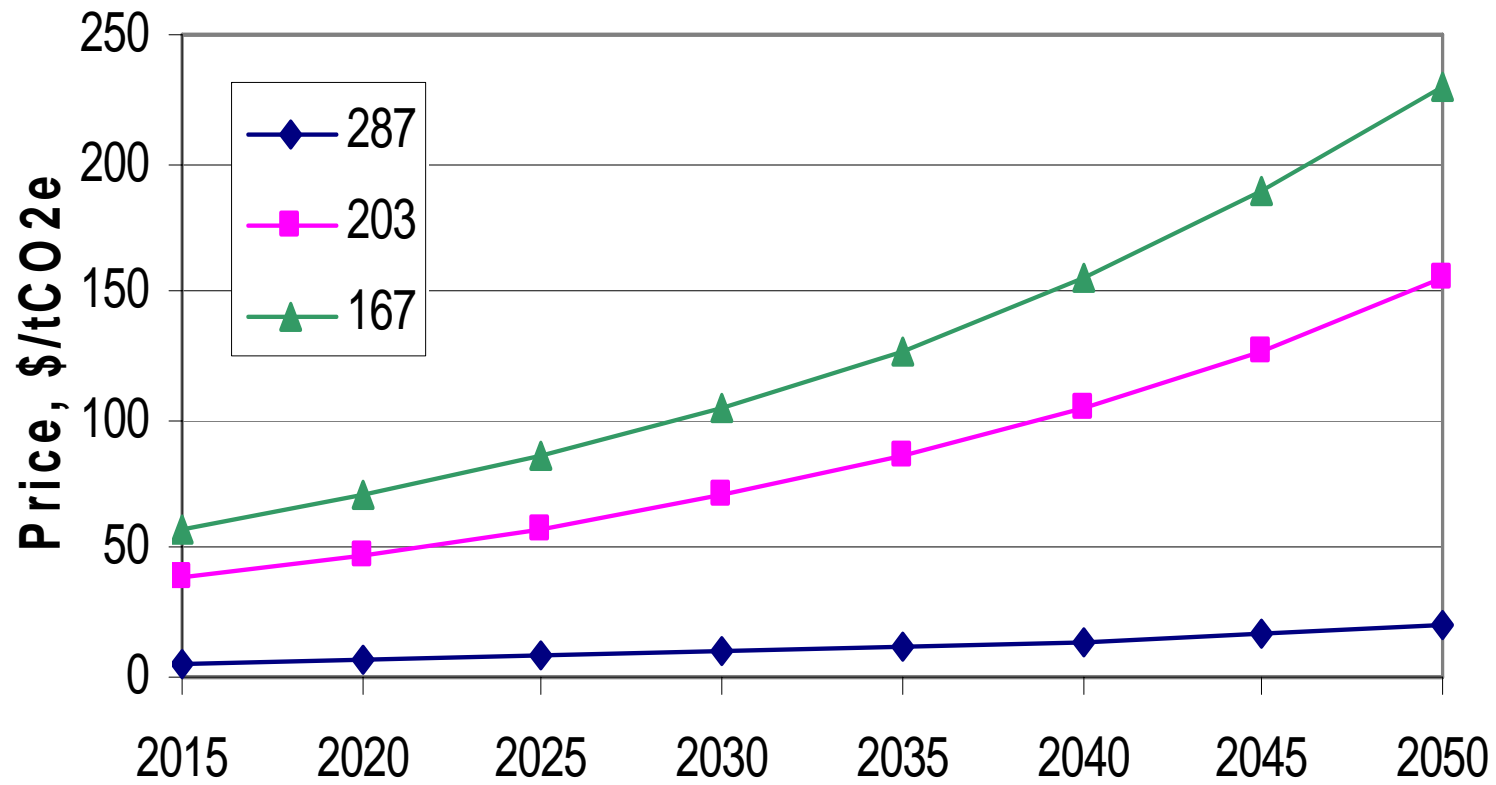
- Warner-Lieberman was last session but the target in that Bill, 80% below current by 2050 has become goal of many including Obama Admin.
- Examine costs, energy implications of such a target.
- Policies abroad but no international emissions trading

See: **Report 146. Assessment of U.S Cap-and-Trade Proposals: These are new updated results which will appear in a forthcoming paper**

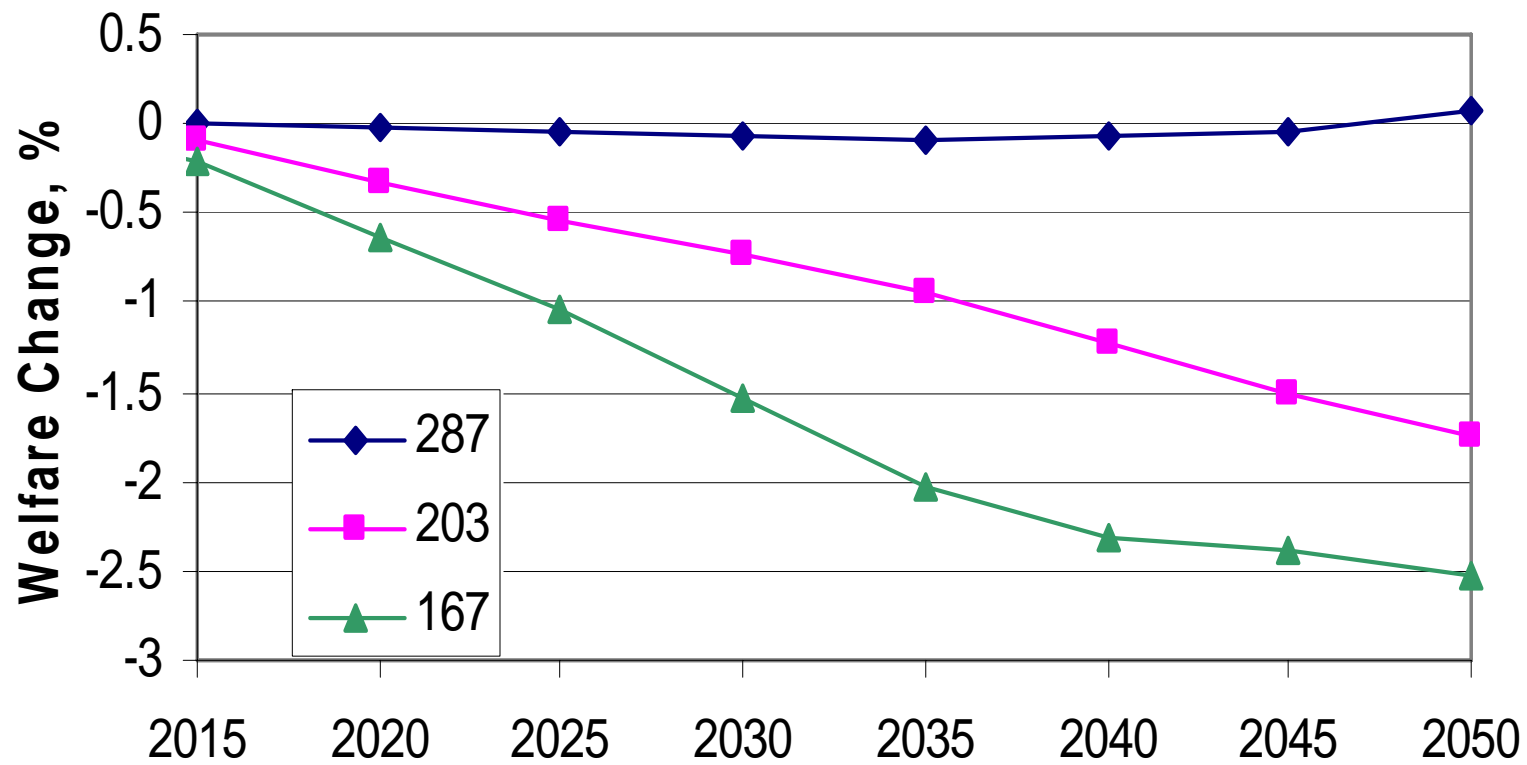
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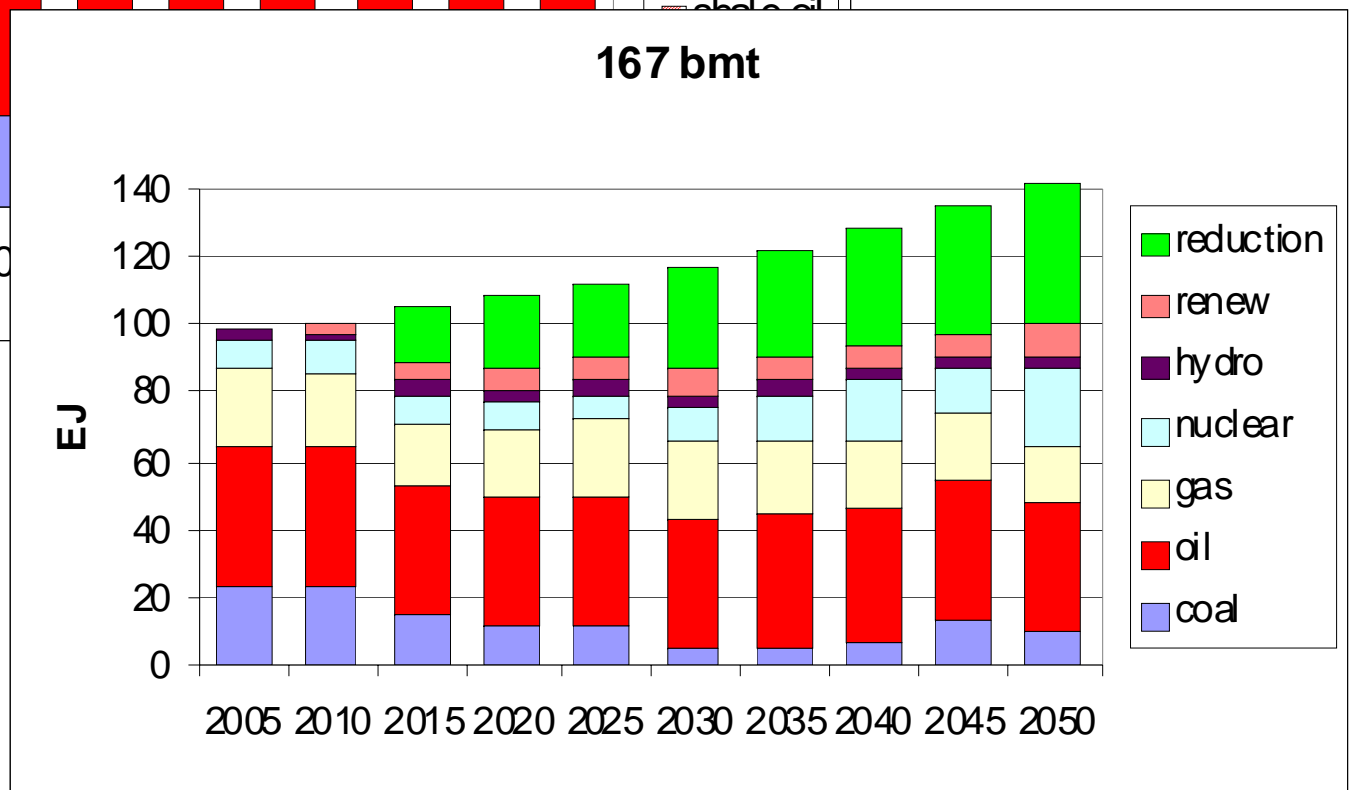
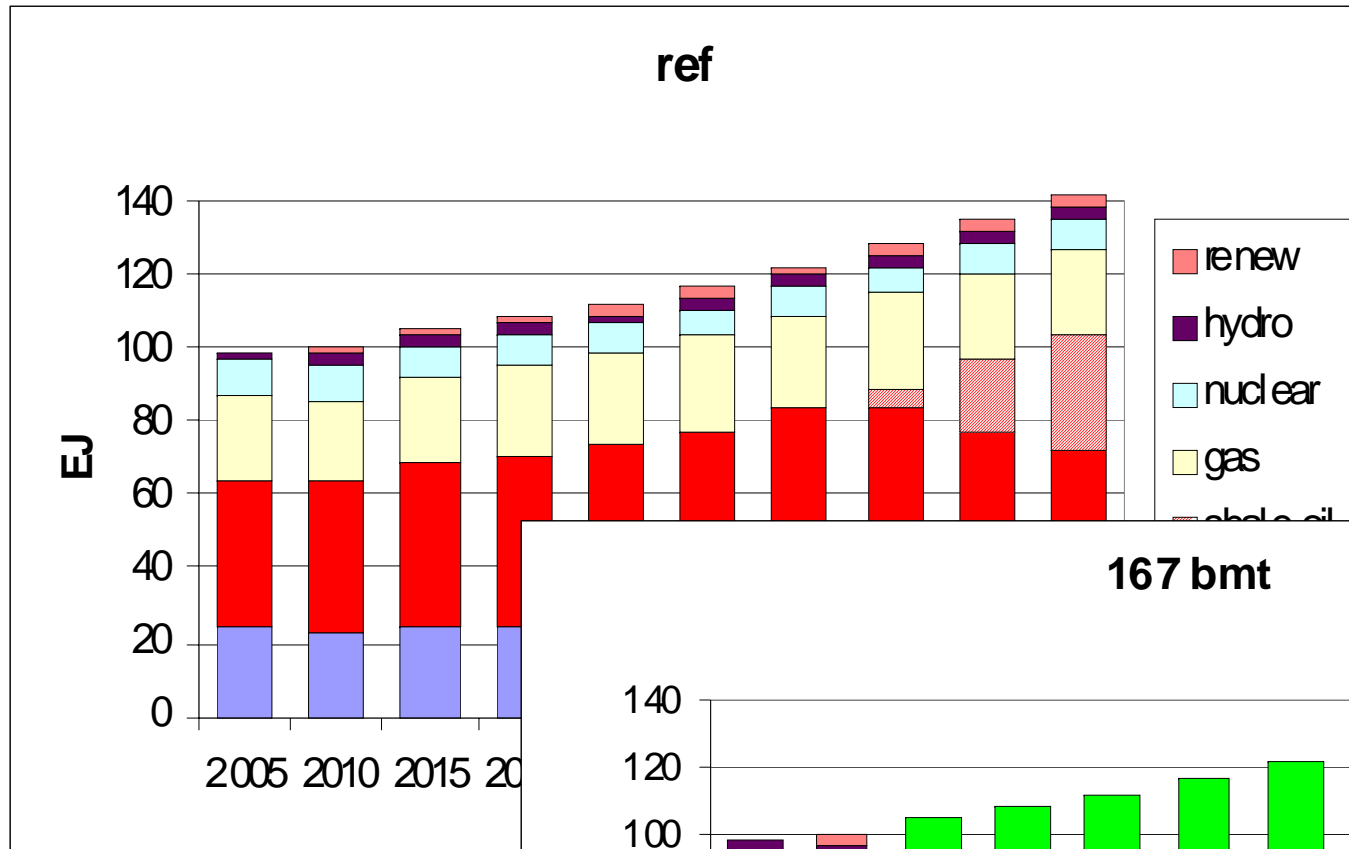
## CO2-e prices - New runs



## Welfare Changes - New runs

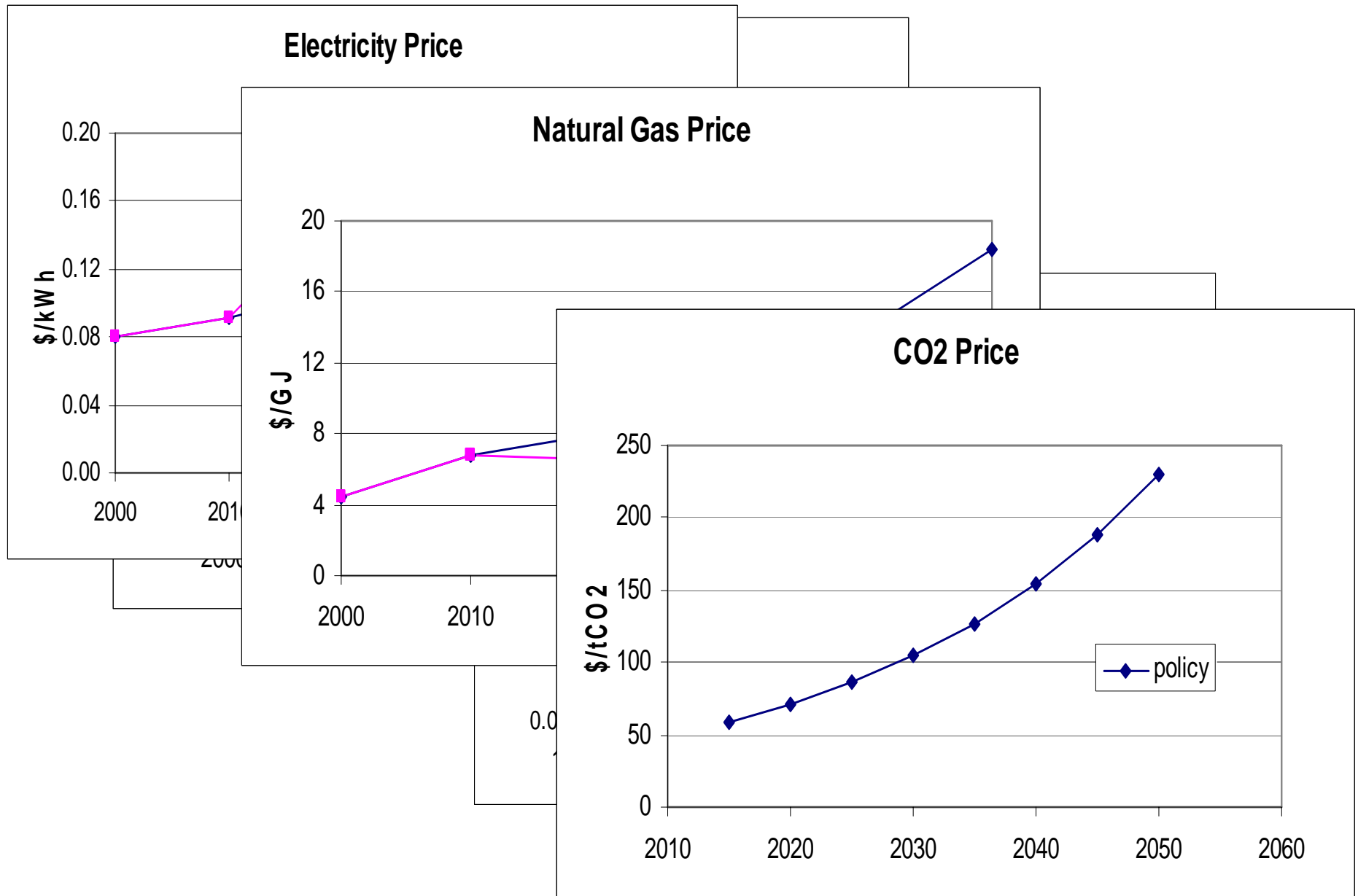


# U.S. Energy Use



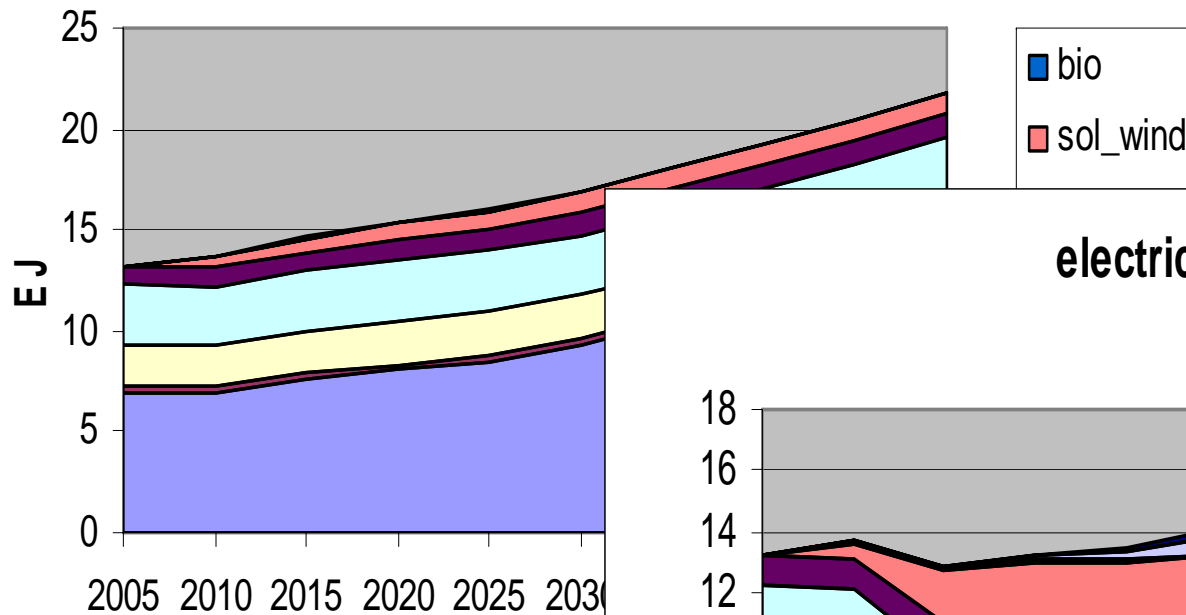
**With 167  
bmt  
policy**

# Fuel and Electricity Prices

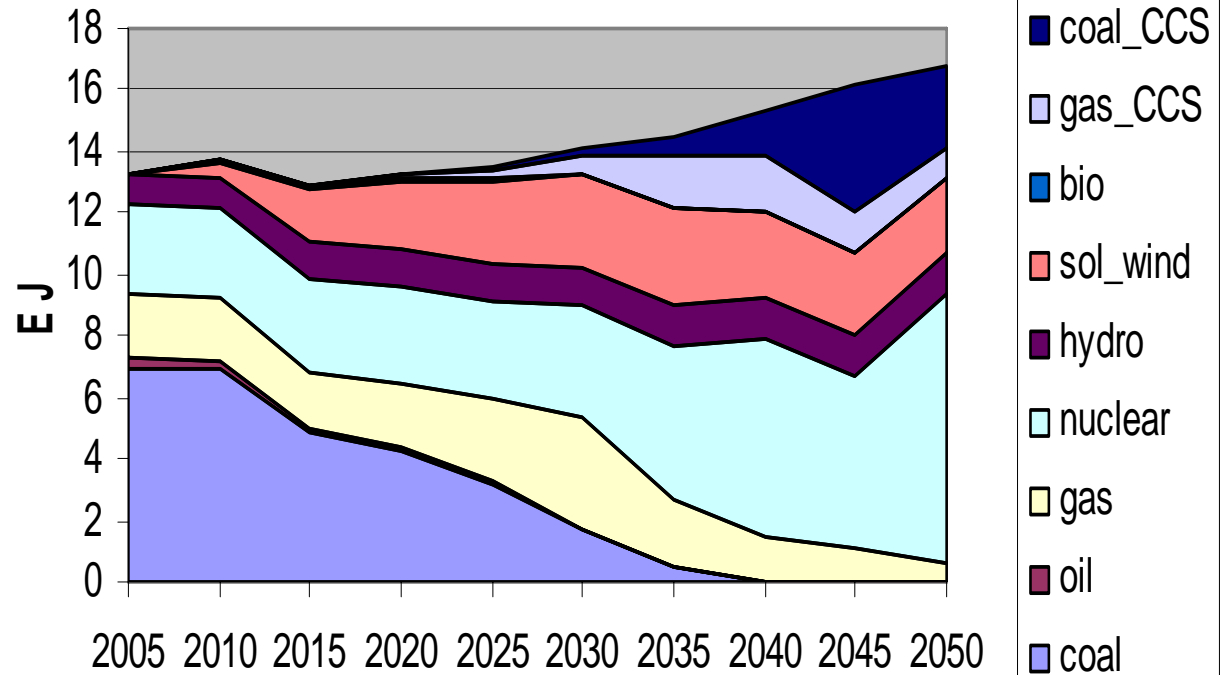


# U.S. Electricity Production by Type

electricity use - ref



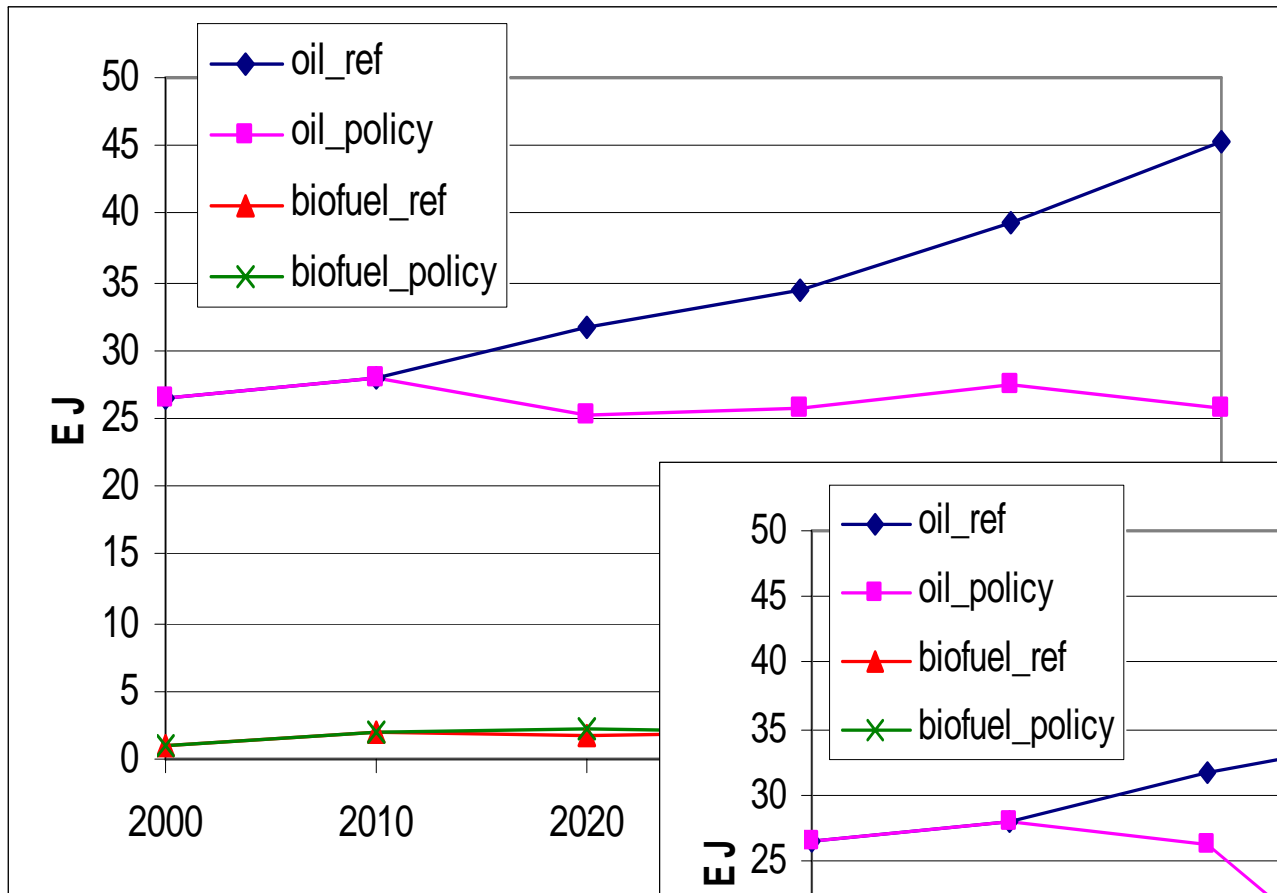
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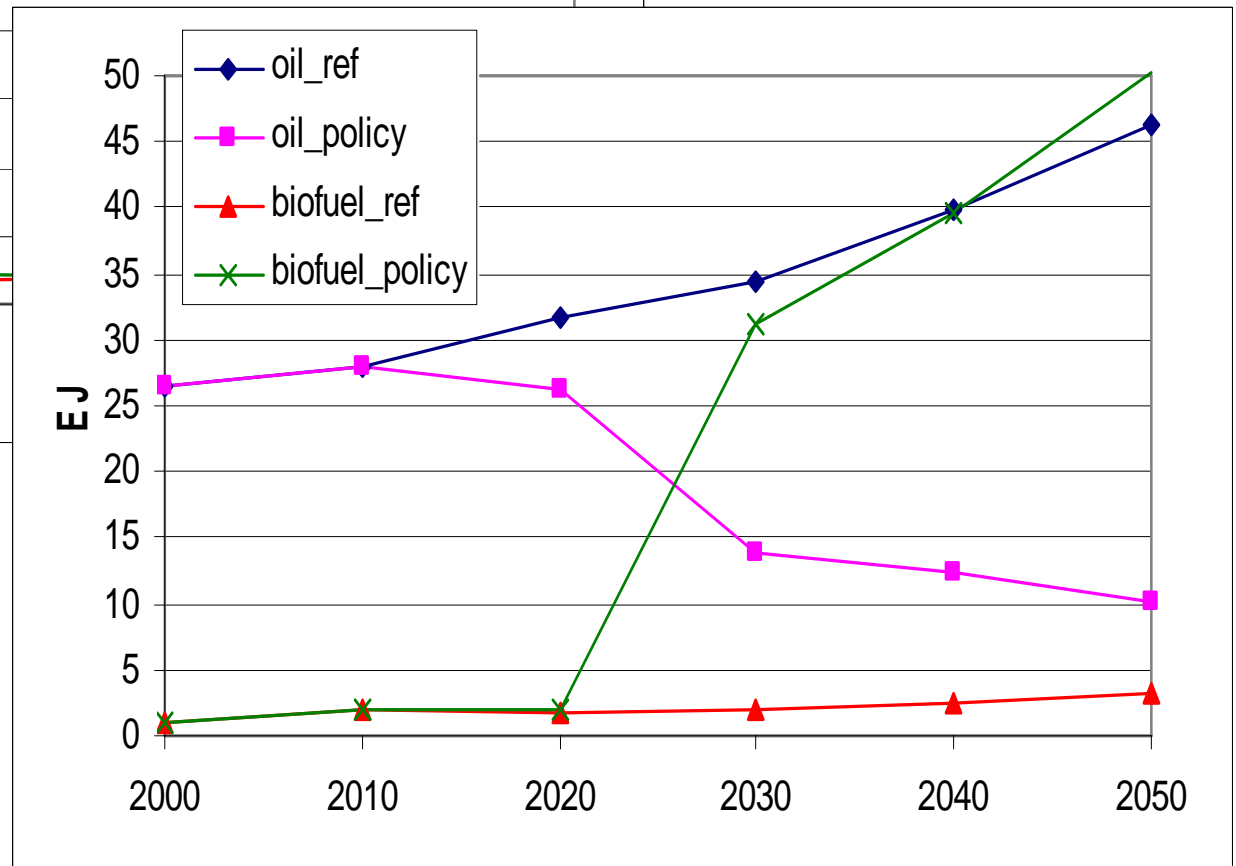
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167 bmt  
policy**

# Cellulosic biofuels @ \$4.50

# Transport Fuels



# Cellulosics @ \$3.00



## These Estimates Are Uncertain

- The future prices of fuels are uncertain and subject to volatility.
- The potential for advanced technologies depends on what those fuel prices will be.
- Equilibrium response—high prices bring about reduction in demand and more conventional supplies (and alternatives) means caution in taking an exogenous price path.
- It appear unlikely that conventional fuel prices will be return to high enough levels in the next couple of decades to give alternatives a good chance.
  - Likely successful alternatives are actually dirtier fossil fuels.
- Alternatives need a climate policy to assure that CO<sub>2</sub> emissions are priced and tip balance toward low CO<sub>2</sub> fuels.