Conversion Subcommittee Report Out 26 February 2009 (revised 12 March 2009)

1. *What are the most promising pathways (thermochem, biochem, hybrid, other) for biomass conversion?*
   - Hydrocarbon fuels ("drop-in" replacements for petroleum fuels) should get very high priority
   - Thermochemical conversion appears most promising in 10-year time-frame due to
     - High tolerance for feedstock variability
     - Ability to co-process biomass with fossil fuels (e.g., tires or coal), which offers important synergies.
     - Key components are already commercial in other industries (e.g., FT synthesis)
   - RD&D program should also allow for "surprises" (e.g., Cello Energy?)

2. *What are the key technical barriers to the most promising biomass conversion pathways?*
   - The subcommittee believes that the Conversion Interagency Working Group has done a good job of identifying the key technical barriers.

3. *Is the current balance of research versus development versus demonstration appropriate for the various biochem, thermoch, and hybrid process pathways?*
   - Overall effort should not try to pick winners – a balanced portfolio is needed.
   - Program details were not reviewed, but there appears to be disproportionate biochem effort:
     - Especially at research level, where feedstock development efforts that support conversion are relevant primarily to biological conversion (tuning composition vs. maximizing sustainable carbon yield).
     - Pilot and demonstration projects are skewed to biochem, even if commercialization prospects for thermochem systems may be more promising (see Q1)

4. *What are the main issues in the conversion of other feedstocks to biofuels? Will the conversion processes for new feedstocks be substantially different from those currently used for plant oil and lignocellulose?*
   - The sub-committee members did not understand the question.

5. *When considering the entire biofuels feedstock supply chain, what are the important interface issues/R&D areas between feedstock production/logistics and conversion?*
   - For biochem conversion, coordinated feedstock development (e.g., composition adjustments too minimize lignin) can bring benefits.

- For thermchem conversion, primary feedstock goal should be maximum sustainable carbon yield per acre and minimum cost of production.
- Common to both conversion routes is improved understanding of feedstock production from marginal/saline lands, from CRP lands, from crop residues, from forest residues/thinnings, and from double cropping.