June 2010 Status Report

Subgroup 2:
Issues Related to Co-Product Credits

Alan Glabe (ARB), Phil Heirigs (Chevron),
Paul Hodson (European Commission), Stephen Kaffka (U.C. Davis),
Don O’Connor (S&T)^2, Mark Stowers (POET)

Presented to the LCFS Expert Workgroup
June 17, 2010
Sacramento, CA
Task 1: Identify Methodologies and Inputs Used to Assess Co-Product Impacts in ARB’s Current Carbon Intensity Estimates and those Used in Other Researchers’ LCA Modeling

• An outline for the Task 1 report has been prepared and reviewed/approved by the subgroup

• Work has been initiated on compiling information on the treatment of co-products in various LCA evaluations. This is taking the form of a spreadsheet table that identifies the fuel pathway, co-products from that pathway, the co-product accounting method and assumptions, value of the credit, and the basis for the estimates.
Task 2: Identify, Prioritize, and Analyze Issues Related to Co-Product Impacts that can be Addressed in the Short-Term

Work has been initiated on two of the high priority issues identified in the work plan:

• **Diet substitution effects/displacement ratios for co-products used in animal feed** – Analysis of USDA data has been conducted; results reveal similar overall displacement ratios to recent work by Argonne. However, split between energy and protein displacement differs; more investigation needed.

• **Special issues in co-products related to soy oil** – GTAP results for soy oil have been reviewed, which imply negative crushing margins in the U.S. Results need to be discussed with GTAP modelers.
Invited Technical Advisors/Additional Support

• Input from animal nutritionists and feed experts is being solicited to gain a better understanding of current practice and anticipated improvements in the use of biofuels co-products in animal rations. We are currently organizing a meeting/call on this subject. The following have thus far been invited (additional invitations likely):

<table>
<thead>
<tr>
<th>Expert Name</th>
<th>Affiliation</th>
<th>Area of Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Beckett</td>
<td>Cal Poly SLO (retired)</td>
<td>Beef (California Operations)</td>
</tr>
<tr>
<td>Ed Depeters</td>
<td>UC Davis</td>
<td>Ruminant Nutrition - Oils in Ruminant Diet</td>
</tr>
<tr>
<td>Galen Erickson</td>
<td>University of Nebraska</td>
<td>Beef Specialist</td>
</tr>
<tr>
<td>Dave Fairfield</td>
<td>National Grain and Feed Association</td>
<td>Feed Industry</td>
</tr>
<tr>
<td>Kirk Klasing</td>
<td>UC Davis</td>
<td>Poultry and Swine Nutrition</td>
</tr>
<tr>
<td>Peter Robinson</td>
<td>UC Davis Extension</td>
<td>Animal Nutrition - Dairy Industry</td>
</tr>
<tr>
<td>Richard Zinn</td>
<td>UC Davis - Imperial Valley AG Center</td>
<td>Animal Nutrition - Beef Cattle Feeding</td>
</tr>
</tbody>
</table>