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Session 4

Industrial Needs, Commercialization, and Process Economics

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Presentations at the "Commercialization" and "Process Economics" section of the 1 9th Symposium were arranged to cover the spectrum of biomass conversion, from "conceptual" processes through to the most advanced piloted technology. Input to the discussion was also sought from the State of California, regarding specific opportunities in that State, it was considered appropriate that some words of caution on the rigors of the marketplace be included.

The session attracted six papers. It opened with a coauthored presentation by two representatives Of the California Energy Commission. This was followed by an "upbeat" review of the "possible" by Dr. Lee Lynd of Dartmouth. Next came a solid presentation by the Co-Chairman, Rus Miller, on the potential for "Strong Acid" hydrolysis. The "Strong Acid" process was characterized as a well researched and understood technology which had recently become economically feasible because of technical advances by Arkenol in novel chromatographic separations for acid recovery. Next in line were two presentations on enzymatic conversion processes. The first was by SWAN, an AMOCO, Stone & Webster joint venture. This was followed by a National Renewable Energy Laboratory (NREL) paper. The estimated costs of ethanol across the spectrum of processes were not dissimilar when adjusted to an equalized base. The final presentation was by Ray Katzen and dealt mainly with the marketplace and the need for clear business plans and a framework for financing.

The analyses presented were generally encouraging. All the "pro forma cost" estimates for ethanol from lignocellulosics were, for the first time, below those of grain ethanol and this represented an unusual consensus. Concern was expressed about the impact of the "deregulation" of electrical utilities on total plant revenue. Deregulation appears to

have reduced the potential value of electrical power by 2 to 3 cents/kWH and, hence, the power "by-product" revenue from plants burning their lignin by 10-15 cents per gallon. This was highlighted as potentially as serious an economic problem as the cost of enzyme. Some discussion from the 'floor' raised the prospect that this might be reversed in the future. By special "green power" allowances given the growing US acceptance of "climate change" as a real problem. This development which could offset the losses from deregulation was seen as possible.