

BIOFUELS

Regulatory & Environmental Issues

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Hurdles to Development & Construction of Biomass to Fuels Facilities

- ◆ Proponents are under-capitalized – rely on outside financing requiring minimum risks
 - Long term commitment from credit-worthy feedstock supplier
 - Price-certain purchase commitment for plant output for term of financing from bankable companies
 - Process guarantees – (in most cases transferred to EPC contractor and results in further escalation of capital costs)
- Lengthy and expensive permitting process
- Policies that fall short of jump-starting the industry

Facility Siting and Permitting Issues

- ◆ Lessons learned from Arkenol's Biomass to Ethanol Permitting Experience in California
- ◆ Plant received all approvals for construction of facility to use rice straw to produce 12 million gallons of ethanol per year in late 90s
 - Lead Agency for Environmental Review
 - ◆ Expected to be land use agency (County) but could include other agencies (Federal (NEPA) or State (CEC if Cogen))
 - ◆ Issues:
 - Coordination (MOUs among agencies to determine who leads review, scope of review and how enforcement of permit conditions will be done)
 - Potential for duplication of public hearings/public notices
 - One comprehensive document that all other agencies can use to issue relevant permits (CUP, Rezone, ATC, EA or FONSI, WDR, etc...)

Facility Siting and Permitting Issues

- Permitting process issues
 - ◆ Agencies may not be staffed to handle nuances of technologies (requires 3rd party consultants)
 - ◆ Air emission reduction credits (availability and cost)
 - ◆ Zoning –
 - can be considered chemical processing facility needing heavy industrial zoning in some jurisdiction (Sac County).
 - Even if located in landfill, may still not be consistent with existing land use authorization (conversion technologies)
 - ◆ Environmental benefit of biomass utilization/solid waste management unaccounted for
 - ◆ Environmental benefits from use of the products not considered

Siting and Permitting Issues – Use of Biomass to Produce Fuels

◆ Developer/Technology Provider Considerations

- Project Design – reduce potential environmental issues
- Know requirements, establish schedule
- Time & money – siting and permitting needs to be done, in most cases before financing for construction is obtained

◆ Regulatory agencies considerations

- Coordination
- Acknowledgement of benefits of biomass utilization
 - ◆ avoidance of open-field burning
 - ◆ extension of landfill life
 - ◆ reduction in forest fires
 - ◆ compliance with landfill diversion mandates
 - ◆ compliance with RFS standards
 - ◆ GHG emission reductions

Environmental Policies, Standards & Regulations Affecting Biomass & Biofuels

- ◆ 2004 – CARB adopted regulations to limit greenhouse gas emissions from new vehicles
 - Need fuels component in GHG reduction strategy
 - ◆ Renewable Diesel Fuel Standard
 - ◆ Renewable Fuel Standard
- ◆ CARB Predictive Model
 - ◆ Develop more flexible regulatory structure that considers total emissions impacts/benefits of all criteria pollutants and toxic air contaminants
 - ◆ How can 10% be ok everywhere else but CA?
- ◆ E-85 Pump System Certification
 - ◆ Develop standard pump certification and refueling station permitting process

Environmental Policies, Standards & Regulations Affecting Biomass & Biofuels

- ◆ CA goal to reduce use of non-petroleum fuels to 20% of on-road by 2020 & 30% by 2030
 - Stuck at 6% (mostly from ethanol blends)
 - E-85
 - ◆ Implement refueling station strategy for E-85 for existing 250,000+ FFVs in California, a few million in the U.S.
 - ◆ Education outreach – most consumers don't know they have FFVs
 - ◆ Encourage FFV production
 - Chicken or egg excuse delays E-85. Let consumers have ***Fuel Choice***
 - No major technical and cost challenges for FFVs – why not a requirement to have a portion of vehicles sold in California be FFVs
 - Provide source of funding for expansion of alternative fuels production in state (eg. Public goods charge/PIER program for power)

Why Biofuels?

- ◆ Integrated solution to waste management, economic development, energy security
- ◆ **Fuel Choice** for Consumers
 - Recent Hurricanes demonstrated our dependence on oil and gas (Katrina shut down 10% of total U.S. refining capacity. Rita caused 20% shut-down of U.S. refining capacity)
 - Fuel shortage and difficulty in supply caused EPA/CARB waivers from reformulated gasoline regulations post Katrina
 - Energy prices predicted to remain high
 - Predicted problems from transitioning from MTBE to ethanol did not happen
 - Ethanol helps extend fuel supplies
- ◆ It's time for U.S. to act
 - Renewable Fuels Program gaining momentum worldwide (Canada, China, Europe, Turkey, etc..)
 - Japan – is now home to the first plant that demonstrates California technology to use cellulose to produce ethanol– (NEDO commitment to sustainable development through biomass resource.) Plans for second plant to use rice straw is in the works.

Brazil showed that a Biofuels Strategy can be done

- ◆ 1973 Middle East Oil Embargo brought Brazil to its knees
 - Brazil was importing 80% of its crude
 - No money to pay for imports to run the country, military dictatorship imposed rationing of gasoline
- ◆ Brazil vowed to kick the import habit
 - Ethanol blends were introduced
 - By 1985 more than 90% of all cars produced in Brazil were designed for alcohol use
- ◆ 1980s put the policies to the test
 - Falling gasoline prices and disrupted ethanol supplies from drought which led to poor sugar harvest
 - Production of ethanol cars slumped
- ◆ 1990s rising energy prices caused Brazil to finally break the chain of gasoline or ethanol
 - Ethanol car concept was re-energized, refueling infrastructure was developed
 - Broke dependence on Middle East oil and sugar producers
 - **Consumer Fuel Choice** through flexible fuel vehicles became the compromise
- ◆ Today because of decades of planning,
 - All gasoline has minimum 22% ethanol content
 - Brazil has a viable domestic ethanol market with tremendous export potential employing 1 million Brazilians
 - Brazilians have the choice of \$4 a gallon for gas or about half that for homegrown fuel



It takes leadership and commitment