



AB 118 SUSTAINABILITY PROGRAM: Summary and Status Report

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AB 118 INVESTMENT PLAN BIOFUELS WORKSHOP

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California Nation-State Statistics

- Population: 36.8 million
- GDP: \$1.8 trillion - 8th largest economy
- GHG Emissions: 440 MMT (2004)
 - 7.2% of U.S. Emissions (Pew Center)
 - 10th largest emitter on global scale
 - Transportation accounts for 38 % of all GHG emissions
- Vehicles: 26.3 million cars + 0.92 million trucks
- Annual Fuel Consumption: 20 billion gallons
 - 16 billion gallons gasoline (~1 billion gallons ethanol E6)
 - 4 billion gallons diesel



Sustainability and AB 118

- “A rapid transition to alternative fuels has the potential to encourage environmentally destructive production practices
- We have developed sustainability goals and criteria for AB 118, and will consider sustainability in every funding decision we make”

Energy Commission Chair

Karen Douglas

– January, 2009





Guiding Principal for Integrating Sustainability Into AB118

- **AB 118 is an Incentive Program Based on Public Money:**
 - Set High Standards for Sustainability
 - Identify and Promote Transportation-Related GHG-Reduction Projects that are Exemplary in Sustainability and Environmental Performance
 - Support Projects that Can Serve as National and International Models
- Incentive program is different than regulatory programs like LCFS



AB 118 Sustainability Provisions

California Health and Safety Code

Section 44271(a)(2)

“Establish sustainability goals to ensure that alternative and renewable fuel and vehicle deployment projects, on a full fuel-cycle basis, will not adversely impact natural resources, especially state and federal lands.”



Energy Commission Approach

- Initial focus on bioenergy crops and biomass resources due to controversy over natural resource impacts and land use effects
- Initial California focus
 - Assuming sustainability means environmental performance beyond regulatory standards, need to develop new concepts to implement
- National-Level Sustainability Definitions and Criteria
 - Track work from federal agencies and national working groups
- International Certification of Sustainable Production
 - Staff tracking main international programs
 - No assessment work yet
- Fund research for sustainability implementation



What Sustainability Factors Will We Consider in Full Fuel-Cycle Analysis ?

Environmental and Ecological Factors

| | | |
|----------------------------|-----------------------|-----------------------|
| GHG Emissions | Energy Use | State & Federal Lands |
| Criteria & Toxic Emissions | Biodiversity | Land Use Changes |
| Water Use | Ecosystems & Habitats | |
| Waste Water Discharge | Forest Cover | |

Economic Factors

| | |
|-------------------------------|--|
| Economic Development Benefits | Costs to Developers for Certification and AB 118 Application Preparation |
|-------------------------------|--|

Social Factors

| | |
|-----------------------|---|
| Public Health Effects | Environmental Justice / Disproportionate Effects to Disadvantaged Populations |
|-----------------------|---|



What Do We Mean By Sustainability?

“development that meets the needs of the present without compromising the ability of future generations to meet their own needs”

Brundladt Report, 1987 World Commission on Environment and Development



Does Sustainability Mean “Better Than We Do Now?”

1. Better than what? – To what are we comparing alternative fuels and vehicle technologies?
 - Petroleum Baseline
 - Agricultural Production Baseline
 - Natural Resource Extraction Baseline
2. How much better?
3. What do we need to measure to know if we are doing things differently enough for them to be better?



Overview of Staff Efforts to Develop Sustainability Goals

- Reviewed literature on sustainability and certification programs for alternative fuels
- Developed strategic partnership with UC Davis Biomass Collaborative and Institute for Transportation Studies
 - Consulted with UC Berkeley Team
- Convened Sustainability Working Group
- Developed staff white papers and concept proposals
- Consulted with energy developers to learn about current production practices and projects
- Met with stakeholder groups to understand concerns and ideas



Staff Assumptions

- Sustainability means “lower impact” not “zero impact”
- Sustainability encompasses global environmental and social issues and cannot be limited to “state’s natural resources”
- Sustainability goals and measures will require environmental performance and production practices that exceed extant regulatory standards
- Infrastructure and fuel pathways interconnected
- Focus on practices, technologies and certification programs rather than performance standards
 - CEC not appropriate agency for setting performance standards across multiple technologies and environmental media
 - Performance standard essentially an environmental regulation



Sustainability and Existing Regulatory Standards

- Is a Sustainable Practice different than Current Regulatory Standards?

- California has stringent standards:

| | |
|-------------|-------------------------|
| CEQA | Environmental Permits |
| Air quality | Water quality |
| Toxics | Biodiversity Protection |
| Land Use | Labor |

Does This Equal Sustainability?

(Note: Compliance is cornerstone of international standards)



Energy Commission View of Sustainability in Context of AB 118

Alternative fuel production methods and products that:

1. Are environmentally superior than standard baseline production methods based on compliance with existing minimum environmental regulatory standards.
2. Maximize inputs of renewable feedstocks and other resources and minimize inputs of non-renewable resources.
3. Maximize the efficient use of resource inputs.
4. Minimize waste streams.



Energy Commission View of Sustainability in Context of AB 118

- Documented environmental performance as measured by specific AB 118 Evaluation Criteria described in regulations and guidance documents.
- Production practices that improve - rather than continue to degrade - air and water quality and ecosystem functions.
- Production processes and products that can serve as models of sustainable production.



AB 118 Sustainability Goals and Evaluation Criteria



3 Sustainability Goals

1. **Substantially reduce the greenhouse gas emissions** associated with California's transportation system to help meet California's 2020 and 2050 climate goals
2. **Protect the environment** from the effects of alternative and renewable fuel development and to **promote the superior environmental performance** of alternative and renewable fuels, infrastructure and vehicle technologies
3. **Enhance market and public acceptance of sustainably produced alternative and renewable fuels** by developing, promoting, and creating incentives for the production of such fuels in **accordance with certified sustainable production practices and standards**



11 Evaluation Criteria

- **Goal 1– GHG Reductions**

Fund projects with lowest greenhouse gas emissions from petroleum baseline using life-cycle analysis

- Greenhouse Gases, Regulated Emissions and Energy Use in Transportation (GREET) model
- Includes indirect land use estimates



Evaluation Criteria

Goal No. 2 – Protect Natural Resources and Promote Superior Environmental Performance

- **Maximize Use of Waste Streams in Feedstocks**
- **Recognize Use of Best Management Practices**
- **Purpose-Grown Energy Crops**
 - Use lands historically used for agricultural purposes
 - Use marginal crop lands not used for food and that do not displace food crops



Evaluation Criteria

- **Recognize Water Use Efficiency and Reduction of Wastewater Discharge**
- **Recognize use of Renewable Energy**
- **Forest Biomass**
 - “forest biomass collection practices that do not diminish ecological values ... consistent with forest restoration, fire risk mgmt, ecosystem mgmt”
- **Co-Benefits**
- **Link Alternative Fuel Infrastructure to Low Carbon Fuels**



Evaluation Criteria

- **Goal 3 – Promote Certified Sustainable Production Practices and Standards**

Program Examples:

RSB

RSPO

UK RTFO

Council Sustainable Biomass Production

Sustainable Biodiesel Alliance

European Commission Sustainability Criteria and Certification

Forest Stewardship Council

Primary tool for driving sustainable practices in international arena



AB 118 Investment Plan Funding Allocations – First Two Years

| Fuel / Technology | 2-Year Funding Allocation (million) |
|---|-------------------------------------|
| Electric Drive | \$46 |
| Hydrogen | \$40 |
| Ethanol (waste stream feedstocks) | \$12 |
| Renewable Diesel / Biodiesel (waste stream) | \$6 |
| Natural Gas (Includes \$10 M biomethane) | \$43 |
| Propane | \$2 |
| Program Support | \$27 |
| Includes \$4 million for sustainability research | |
| Total | \$176 |
| Sub-total Biofuels (ethanol, biodiesel, biomethane) | \$28 |



Status Report on Sustainability Criteria in 2009 ARRA-AB 118 Proposals

136 Total Proposals

- No. Category
- 42 – Clean Cities
- 13 – Biorefineries
- 11 – Battery Manuf
- 38 – Transp. Elect.
- 8 – TIGGER
- 24 – ARPA-E

Only Clean Cities w/ biomass and Biorefineries triggered sustainability criteria`

| Clean Cities Category (8 with Biomass Elements) | |
|---|-----------------|
| Criteria | # Times Applied |
| 6- Environmental Performance | 5 |
| 7- Feedstock Waste Streams | 8 |
| 8- Best Management Practices | 3 |
| 9- Fuel Crop BMPS | 0 |
| 10- Water Efficiency | 5 |
| 11- Renewable Energy Use | 5 |
| 12- Forest Biomass Management | 0 |
| 13- Benefits to State Natural Resources | 6 |
| 14- Low Carbon Alt. Fuel Infrastructure | 8 |
| 15- Sustainability Certification Program | 2 |



AB 118 Sustainability Program: Current Activities

- Modify Scoring Criteria to better reflect sustainability performance
- Develop forest biomass sustainability criteria through Interagency Forestry Working Group
- Evaluate bioenergy crops appropriate to California natural resource constraints
- Develop sustainability parameters suitable for GREET-type models
 - Life Cycle Associates contract for water
 - TIAX sustainability contract



AB 118 Sustainability Program: Next Steps

- Major New Sustainability Contract with ICF and LCA
- Develop Proposals for \$4 Million Sustainability Research Fund
- Evaluate Sustainability Certification Programs:
 - Roundtable on Sustainable Biofuels
 - Roundtable on Sustainable Palm Oil
- Assess and Develop Minimum Sustainability Measures for bioenergy crops and forest biomass



AB 118 Sustainability Program: Next Steps

- Develop Sustainability Criteria for Algae Projects
- Investigate Tropical Forestry Sustainability Issues
- Develop Sustainability Criteria for other fuel pathways – electricity and hydrogen

- Long Term – Develop Sustainability Criteria for vehicle and component manufacturing.