

REGULATORY CONCEPTS ON SUSTAINABILITY GOALS for the Alternative and Renewable Fuel and Vehicle Technology Program

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PREAMBLE

The California Energy Commission (Energy Commission) recognizes state, federal and international concerns about potential sustainability issues associated with alternative transportation fuels, most notably with biofuels. The Energy Commission further recognizes that the volume of alternative fuels needed to substantially reduce petroleum use in California carries the risk of encouraging or promoting environmentally and socially destructive production practices in California, North America, and globally. California's market size and internationally recognized environmental ethic create an opportunity to drive international standards towards certified, sustainable production so that global communities can enjoy the economic benefits of replacing petroleum with alternative fuel.

After extensive research and consultation with government, academic, industry and non-governmental organization experts, Energy Commission staff find no single definition or measurement system for sustainability that is suitable to meet regulatory standards for the eight year duration of the Assembly Bill (AB) 118 funding program. The science of defining, measuring, and ensuring sustainable alternative fuel production evolves rapidly and continuously. Practices believed to produce net, life-cycle greenhouse gas (GHG) reduction benefits have been found to create unforeseen and unanticipated adverse consequences as new scientific theories and assessment methods evolve, such as indirect land use and food-price effects.

Statutory Requirements

AB 118 requires the Energy Commission to develop and implement sustainability goals as part of a suite of program goals for the development of alternative fuels and transportation technologies. AB 118 Section 44271(a)(2) requires the Energy Commission to:

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

AB 118 includes several preference criteria that reinforce the sustainability provisions. Section 44272(b) requires the Energy Commission to provide preferences to projects maximizing program goals based on the following environmental criteria:

- (2) The project's consistency with existing and future state climate change policy and low-carbon fuel standards.
- (3) The project's ability to reduce criteria air pollutants and air toxics and reduce or avoid multimedia environmental impacts.
- (4) The project's ability to decrease, on a life-cycle basis, the emissions of water pollutants or any other substances known to damage human health or the environment, in comparison to the production and use of California Phase 2 Reformulated Gasoline or

diesel fuel produced and sold pursuant to California diesel fuel regulations set forth in Article 2 (commencing with Section 2280) of Chapter 5 of Division 3 of Title 13 of the California Code of Regulations.

(5) The project does not adversely impact the sustainability of the state's natural resources, especially state and federal lands.

(9) The project's ability to reduce, on a life-cycle assessment, GHG emissions by at least 10 percent, and higher percentages in the future, from current reformulated gasoline and diesel fuel standards established by the state board.

Energy Commission staff interprets these preference criteria as key elements to the suite of issues to be included in sustainability goals for alternative transportation fuels; reducing air emissions, water pollution, GHG emissions, and other associated environmental impacts are part of sustainable production practices for alternative fuels.

The Energy Commission establishes Sustainability Goals as required by statute. As new information on sustainable production practices becomes available, the Energy Commission shall provide more specific guidance as each Investment Plan is developed through public proceedings.

Staff Goals for an AB 118 Sustainability Program

Energy Commission staff has the following programmatic goals:

- Develop a framework general enough to meet the requirements for implementing regulations, but can be modified in future *Investment Plans* and solicitations to incorporate new information and systems on sustainability programs globally.
- Develop standards and criteria that promote sustainability in the alternative fuels industry, but that do not impose economic costs or procedures that could unduly hamper the commercial viability of emerging alternative fuels.
- Recognize that some production methods and practices may have higher levels of environmental effect in initial years of implementation, but that through commercial learning and experimentation, may lead to practices, methods, and technologies with substantially lower levels of environmental impact over time.
- Continue to understand and incorporate new information on indirect land use changes and fuel versus food issues.
- Develop definitions, standards and reporting systems that compliment the work of the California Air Resources Board (ARB) on sustainability provisions for the Low Carbon Fuel Standard (LCFS).
- Identify benchmark-caliber systems developed by other countries, organizations or industry groups that can serve as models for California.

- Balance the “California-centric” aspects of AB 118 with the reality of a global system of production for alternative fuels and standard practices for assessing alternative fuel pathways on a full fuel-cycle basis.
- Leverage California’s market size and environmental ethic to drive international standards towards systems of certified, sustainable production.

Key Assumptions for Proposed Goals

Staff has evaluated several key issues while interpreting the legislation, and makes the following assumptions on the scope of the proposed goals:

- Sustainable production of alternative fuels means that environmental impacts will continue to occur in the near term; just at a lower, less damaging environmental scale than standard practices. Sustainability does not equal zero-impact energy production.
- Sustainability goals must be applied globally to ensure full-fuel cycle assessments in a global fuels market, and are not restricted to California’s natural resources. While a strict reading of the statute seems to indicate a narrow focus on the state’s natural resources, this is at odds with the full fuel-cycle assessment provision that is also within the statute. This also conflicts with the realities of a national and global market, and the broad manner in which environmental, social, and economic aspects of sustainability are routinely considered in life-cycle scale analyses.
- California has one of the most stringent and comprehensive environmental review processes in the world, as exemplified by the California Environmental Quality Act (CEQA) and associated state and federal environmental statutes and regulatory programs. A cornerstone for many internationally recognized, certified sustainability programs is compliance to local environmental laws and regulations. The Energy Commission assumes that *sustainability goals will require environmental performance and production practices from applicants for the AB 118 funding program that exceed extant regulatory standards* if the term “sustainability” is to have any substantive meaning. Full legal and regulatory compliance with all applicable state and federal laws and regulations is the *minimum* standard for funding consideration.
- Full fuel cycle analyses of fuel pathways means that infrastructure projects, alternative technologies and alternative fuels be considered as a complete system. For example, a funding application for a hypothetical 85 percent ethanol (E-85) fueling station on state property that might be supplied from corn or sugarcane-based ethanol from around the country or globe would need to consider and account for the full-fuel cycle implications of the fuel pathways.

Sustainability Goals

AB 118 Section 44271(a)(2) requires that the Energy Commission shall:

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

Interpretations

Energy Commission staff interprets “state’s natural resources” to include forest lands, range lands, waters and watersheds, biodiversity resources (fish, wildlife, and flora) and their prime habitats, coastal lands and waters, minerals, and prime agricultural lands.

“State and federal lands” include surface and subsurface (water bottoms and tidal zones) lands owned wholly or in part by any branch or division of California State and federal government.

Unsustainable production of alternative fuels can contribute to the collapse of terrestrial and aquatic ecosystems, loss of sufficient supplies of potable water to meet human health requirements, loss of air quality needed to meet public health standards, or loss of arable land needed to grow basic food commodities essential to human welfare. Energy Commission staff interprets a sustainable fuel production system as one in which the amounts of land and natural resources used for alternative fuel production, and the resulting pollution loading from air, water, toxic, and solid waste streams, do not further and unacceptably degrade already damaged ecosystems, water basins and air basins in California, the U.S., and around the world. Sustainable practices recognize and respect the physical carrying capacity limits of natural systems at the local, regional, and global scale. Sustainable practices respect human dignity and contribute to the economic welfare of people around the world.

Proposed Sustainability Goals and Project Characteristics to Further Each Goal

The Energy Commission’s four proposed sustainability goals are described below, followed by examples of project characteristics that would further each goal. Note that demonstration of a single project characteristic listed here is insufficient to guarantee that a project would further all of the Energy Commission’s sustainability goals.

Sustainability Goal No. 1: The Energy Commission’s long-term goal for the Alternative and Renewable Fuel and Technology Program is to identify and support alternative fuels and technologies with the best potential for meaningful reductions in GHG emissions associated with California’s transportation system in order to help the state meet the goals set forth in the California Global Warming Solutions Act of 2006 (AB 32). AB 32 requires capping California’s GHG emissions at the 1990 level by 2020, which translates to about a 28 percent

cut in emissions below projected 2020 levels.¹ The Governor's long-term target, as articulated in Executive Order S-03-05, calls for reducing emissions to 80 percent below 1990 levels by 2050.

Project Characteristics to Further Sustainability Goals

Characteristic 1: Projects that demonstrate a minimum 10 percent reduction in GHG emissions on a life-cycle basis from the petroleum baseline, including direct and indirect land-use change effects, will further sustainability goals. However;

Characteristic 2: The Energy Commission recognizes that some technologies with strong potential for substantial, long-term reductions in life-cycle scale GHG reductions may require longer-term incubation for optimal results to be achieved, and that such technologies may have current GHG footprints above the 10 percent criteria.² For example, an E85 fueling station in California might dispense ethanol made from Midwest corn in the near-term, but dispense ethanol from cellulosic feedstock when commercially available. Such bridging technologies can further sustainability goals in the long term.³

Sustainability Goal No. 2: The Energy Commission's goal in administering AB 118 is to recognize, support and encourage production of alternative fuels and vehicle technologies in manners that are more environmentally efficient and less environmentally damaging than current baseline practices for the production of petroleum fuels, production of basic agricultural commodities, and extraction of natural resources. The Energy Commission seeks to ensure that the amounts of land and natural resources used for alternative fuel production, and the resulting pollution loading from air, water, toxic, and solid waste streams, do not further and unacceptably degrade already damaged ecosystems, water basins and air basins. It is assumed that all projects subject to CEQA shall at a minimum assess and mitigate project impacts in accordance with state and federal law.

Characteristic 3: The Energy Commission can encourage alternative fuel and transportation projects to minimize environmental impacts and natural resource use by recognizing projects that maximize the use of waste stream materials as their feedstock.

Characteristic 4: Projects that use purpose-grown energy crops from California that submit a Sustainability Best Management Practices Plan⁴ developed for the subject crop and processing procedure in conjunction with the California Biomass Collaborative and Bio-energy Working Group, will further sustainability goals.

¹ California Air Resources Board, Climate Change Draft Scoping Plan (June 2008 Discussion Draft).

² This concept for transitional technologies was identified in the State Alternative Fuels Plan (AB 1007 Report).

³ However, particular bridging technologies may not be consistent with all of the Energy Commission's sustainability goals.

⁴ Professor Stephen Kaffka at UC Davis, Director of the Biomass Collaborative, has informally agreed to this concept.

Characteristic 5: The Energy Commission can further sustainability goals and promote the development of certification systems for sustainable alternative fuel production by recognizing projects that use a recognized sustainability reporting system.⁵

Characteristic 6: The Energy Commission can encourage the development and production of sustainable biofuels appropriate to the climate and resource constraints of California by recognizing purpose-grown energy crops uniquely suited to meet California's climate, water and natural resource constraints.

Characteristic 7: The Energy Commission can encourage alternative fuel and transportation projects that minimize impacts to natural landscapes and ecosystems by recognizing projects with feedstocks originating on extant agricultural areas historically used for tilled, irrigated agriculture. Projects with feedstocks from lands used for conservation purposes, such as the Conservation Reserve Program, would not further AB 118 sustainability goals.

Characteristic 8: The Energy Commission can further sustainability goals by recognizing projects that use renewable energy and / or cogeneration in production, processing, and distribution phases.

Sustainability Goal No. 3: The Energy Commission recognizes that some climates are uniquely suited to the production of promising biofuel feedstocks such as sugarcane and palm oil. However, many legitimate concerns over secondary environmental impacts to water supplies, ecosystems and wildlife from non-sustainable production have been identified. The Energy Commission's goal is to identify and promote practices and programs for certified, sustainable production of biofuels that can serve California markets with low GHG transportation fuels and provide economic benefits to under-privileged peoples and societies around the world.

Characteristic 9: The Energy Commission can further sustainability goals by recognizing projects that include a commitment to produce or procure fuels made with best-available sustainable production methods and practices. Such commitments might include a proposal for supply chain management of Best Available, Most Sustainable fuels.⁶

Characteristic 10: The Energy Commission can further sustainability goals and promote the development of internationally-recognized certification systems for sustainable

⁵ Such systems will be identified and perhaps developed in consultation with researchers at UC Davis and UC Berkeley, the ARB, and interested stakeholders. Such systems could include the UK's Renewable Transport Fuel Obligation Program, the Roundtable for Sustainable Palm Oil (if compliance can be guaranteed), and the Forest Stewardship Council.

⁶ "Best Available, Most Sustainable fuel" is conceptually similar to the Best Available Control Technology concept widely used in major environmental statutes and regulations, in which pollution control technologies with the highest levels of pollution control that are commercially feasible and viable become the benchmark standard for an industry sector.

alternative fuel production by recognizing projects that use a recognized sustainability reporting system.⁷

Sustainability Goal No. 4: The Energy Commission’s goal is to minimize the risk of unintended consequences from domestic and global alternative fuel production, especially from fuels derived from purpose-grown energy crops. The Energy Commission recognizes and is concerned about possible primary and secondary impacts to essential food supplies for human consumption and feeds for animal production. Such impacts include induced, indirect land use changes resulting in higher than anticipated GHG emissions, reductions in commodities needed for human consumption and resulting higher commodity prices, and potential abuse of basic human and labor rights associated with alternative fuel production.

In furtherance of the goal to minimize the risk of unanticipated consequences while endeavoring to promote the widest possible range of alternative fuels, technologies and infrastructure, the Energy Commission shall use the concept of Adaptive Management to make changes in AB 118 program funding criteria as new information emerges. The Energy Commission shall also continue to fund and collaborate in models such as GREET in order to maximize the utility of their analytic power to identify and help resolve primary, secondary and unanticipated impacts from alternative fuels.

⁷ See Footnote 5.