BioEnergy Producers Association
Clean Technology for Renewable Energy

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I am here today to talk about a subject on which the nation has not yet focused or made a priority:

The production of liquid and electric energy from organic wastes.

America generates between 1.5 and 2.0 billion tons of carbon-based wastes annually.

This includes: municipal solid waste, biosolids, animal wastes, green wastes, pulp and paper wastes, plastics, construction and demolition wastes, auto shredding residues, agricultural residues and forest thinnings—some 500 million tons of which are *readily available* for conversion to energy in our local communities. The nation also disposes of 300 million used tires each year.

Theoretically, the new conversion technologies now under development, construction or in operation in North America could co-produce enough ethanol to eliminate our need to import petroleum AND thousands of megawatts of green power. For example, on a national basis, we are currently landfilling 250 million tons of municipal waste every year, much of which is post-recycled.

Just from this single waste resource, we theoretically could co-produce 11.2 billion gallons of ethanol and almost 9000 MW of power. Some technology providers are projecting the ethanol production potential to be as high as 21 billion gallons annually.

In California, in 2008, we landfilled approximately 35.5 million tons of post-recycled municipal waste, down from about 40 million tons per year prior to the recession. Conservatively, from this single resource, California could produce 1.6 billion gallons of ethanol and some 1,250 MW of power, turning the state into a net exporter of ethanol.

The concept provides the basis for locally created investment, construction, green collar jobs--and low-cost biofuels and renewable electricity for our citizens. As we can build these plants right in our local communities where the feedstocks are generated, collected and transported to landfills, it eliminates the need for lengthy transmission lines, as may be required for solar or wind, or the importation of liquid fuel, either from other states or foreign petroleum. The electricity we can create is base load. It is not intermittent.

The recycling of the carbon in organic wastes could significantly reduce our need to use food-derived resources or to grow millions of acres of cellulosic plant materials as feedstocks for the production of ethanol.

These processes are consistent with nature's own cycle of carbon creation and assimilation. The use of organic wastes as feedstocks for renewable energy production results in zero impact on Indirect Land Use Change.

The Argonne National Laboratory reports that cellulosic ethanol can reduce CO2 emissions from automobiles by 86% or more as compared to an energy-equivalent amount of gasoline, and on a life-cycle basis, by using waste resources as feedstocks without the need to grow the feedstock materials, the potential reduction is 100% or more. They project the total potential production of ethanol from all available organic waste resources nationally at 100 billion gallons.

On a life-cycle basis, the production of ethanol from organic wastes is the only pathway that absolutely can meet or exceed the goals for greenhouse gas reductions established in California's new Low Carbon Fuel Standard.

As these new conversion technologies produce a surplus of electricity over their parasitic requirements and use waste materials that do not require an expenditure of energy and water resources for the growing, harvest and transport of feedstocks, they render obsolete the on-going discussion about the energy efficiency of ethanol.

By using wastes that otherwise would be placed in landfills, renewable energy producers would receive tipping fees under long-term contracts for waste disposal, resulting in a negative feedstock cost and eliminating commodities speculation as a factor in biofuels production. As a result, companies that are now commercializing these new thermal conversion technologies state that they can produce ethanol for $1.00 or less per gallon.

Thermal technologies dispose of wastes with minimal air emissions, because the synthesis gases they produce do not enter the atmosphere following the gasification step. They can also produce electricity without combustion, using the waste heat generated by the cooling of the synthesis gases. The clean disposal of wastes that otherwise would be placed in landfills and the production of electricity without combustion represent major environmental breakthroughs.

In April of this year, the BioEnergy Producers Association commissioned a study of Emissions from Thermal Conversion facilities by the University of California – Riverside. It found that more than 300 thermal conversion facilities are now operating throughout the world. All are required to meet the emissions standards of their local jurisdictions and some of those standards are even higher than those of California.

These are not waste combustion facilities. All 300 create one and the same product. They use gasification, plasma or pyrolysis to thermally decompose organic matter into synthesis gas, which is an intermediate for the production of chemicals, a wide range of biofuels, electricity or pipeline quality synthetic natural gas. More than 100 of these are disposing of municipal solid waste in the process of producing energy, principally electricity.

By disposing of organic wastes before they are placed in landfills, you can recover five times as much energy as you can from landfill biogas--and these technologies can reduce by up to 80% the amount of material being placed in landfills—and the attendant cost of maintaining these landfills for decades to come. The City of Los Angeles creates enough waste to fill Dodger Stadium every ten days.

There are at least 50 conversion technology projects now in development or construction in North America, but almost none in California.

Why?

Because we have a repressive statutory and regulatory environment that is driving technology providers and investment capital away from the state.

Just last Friday, the Department of Energy announced 21 direct grants totaling more than $600 million for conversion technology development and plant construction. Here is how several California companies fared:

Pacific Renewable Fuels, headquartered near Sacramento, received $20 million to build a pilot plant for their thermochemical conversion system that will produce diesel fuel from biomass—in Toledo, Ohio.

Bluefire Ethanol had their grant increased to $81 million--for a waste-to-ethanol plant that they recently moved from Southern California to Mississippi, due to regulatory uncertainties.

San Diego-based Sapphire Energy was awarded $50 million, as well as a $55 million loan guarantee from the Department of Agriculture, for a plant to produce jet fuel and diesel from algae--which the are building in Columbus, New Mexico.

Los Angeles-based New Planet Energy is involved in a joint venture for renewable energy plant construction with INEOS Bio. The INEOS Bio process co-produces ethanol and electricity from organic waste materials. The joint venture received $50 million to assist in commercial plant construction, but the project will be located in Florida.

South San Francisco-based Solazyme received $21.8 million to assist in constructing a commercial scale biorefinery that will produce oil that can be converted to oil-based fuels—in Riverside, Pennsylvania.

In all, eight federal grants and loan guarantees totaling $323 million (supporting total project costs of $651 million) were awarded to California-based companies, but only 14% of the federal support and 9% of the total project costs will be spent in California.

In addition, Fulcrum BioEnergy, headquartered in Pleasanton and funded in part by California venture capital, chose to locate its first thermochemical waste-to-ethanol plant--a $120 million project--just across the border east of Reno, due to the regulatory uncertainties affecting permitting and profitable operation in California.

The DOE awarded six grants ($192.9 million supporting a total investment of $410 million) for thermal conversion technologies. None of these projects will be built in California.

Our Association, with bi-partisan authorship by Anthony Adams and Fiona Ma, is attempting to remove from statute scientifically inaccurate definitions that require these technologies to be permitted as major solid waste landfills, rather than manufacturing facilities, definitions that require zero air emissions from the entire liquid or electricity production process, a level of performance required of no other manufacturing facility in the state.

Think of how many power plants or gasoline refineries we would have in California if they had to meet those standards. Industrial sources and power plants make up 43 percent of California's greenhouse emissions.

Our legislation also clarifies that electricity produced from the biogenic portion of these waste streams qualifies as renewable electricity under the RPS. The language in our bill closely parallels that of the Waxman-Markey bill in Congress.

There are those in California who would like renewable electricity to come only zero emissions technologies, but in reality, on a life-cycle basis there is no such thing, and the California Energy Commission has dismissed zero emissions as a factor in renewable electricity production.

These technologies are not competitive with current recycling processes. We prefer post-recycled wastes streams and our legislation requires that all of the materials we process must first be recycled to the maximum extent feasible.

Ethanol is already integrated into 80% of the nation's gasoline distribution network. It is currently the only fuel that can be safely blended with gasoline to reduce the volume of petroleum being imported by this nation. Petroleum is going to be the dominant factor in liquid energy production for decades to come.

Ethanol, in blends up to E85, remains our best path to supplementing the use of petroleum in light transportation vehicles.

Those who oppose these technologies believe that we can get to zero waste in California and in the nation simply through source reduction, re-use and recycling. That is a fantasy because a substantial portion of the waste stream, such as food wastes, has no practical use and will never be economically feasible for recycling.

California’s population is expected to grow by some 10 million people over the next 25 years. Unless more flexible legislative and regulatory policies are put in place, enabling the use of its waste resources for energy production, the state will landfill more than one billion tons of municipal solid waste during that time--and a major contributor to energy independence, AB 32 GHG reduction goals and a Low Carbon Fuel Standard (LCFS) will be lost.